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Saori Fotenos
IT Manager, Reuters

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Computer Associates



Backstage Pass

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Hosted CRM Looks to Step Things Up

Vendors cite large deals as a sign of growing acceptance of online apps, but skeptics remain. By Marc L. Songini

NOVEMBER has been a busy month for Salesforce.com Inc. The hosted CRM pioneer held its second annual user and developer conference, where it introduced a software upgrade that became available Nov. 15. San Francisco-based Salesforce.com, which went public in June, also reported third-quarter revenue of \$46.4 million and raised the sales forecast for its full fiscal year.

And, perhaps most significantly, the company announced a 1,500-user subscription deal with office supplies retailer Staples Inc. and a 2,000-user commitment from pharmaceutical services firm Quintiles Transnational Corp. Those are the seventh and eighth contracts that Salesforce.com has signed that involve more than 1,000 end users.

Salesforce.com CEO Marc Benioff said last week that he thinks hosted CRM is "now at the tipping point," with mainstream adoption of the technology starting to approach a critical mass of users. Rival vendors, such as Siebel Systems Inc., also are rushing to position themselves to take advantage of an expected up-surge in demand for CRM.

Chris Monica, senior vice president of sales and marketing at Houston-based EGL Inc., which operates under the name EGL Eagle Global Logistics, has already embraced hosted CRM. Monica said that three years ago, when EGL was looking for software to help standardize its global

sales processes and make them more nimble, the \$2 billion company decided to let someone else handle the IT headaches.

Until that point, EGL's 800-person sales force had relied on e-mail and other manual processes to track customer interactions and sales opportunities. Now sales personnel at the provider of transportation and supply chain information services use Salesforce.com's hosted applications. That has made it easier to share data, keep track of what's in the sales pipeline and coordinate marketing campaigns, according to Monica. "Salesforce.com has been a vehicle for the company to connect around the world in real-time fashion," he said.

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would find installing and maintaining complex software from vendors such as Siebel or SAP AG a budget buster—as well as a potential technical nightmare.

A case in point is Document Sciences Corp., a Carlsbad, Calif.-based vendor of document management software with annual sales of about \$25 million. David Barker, the company's IT director, said Document Sciences began using NetSuite Inc.'s hosted CRM applications 18 months ago and currently has about 70 workers

accessing the software.

Prior to signing up with San Mateo, Calif.-based NetSuite, Document Sciences relied on a hodgepodge of third-party and homegrown sales and marketing applications, including Amdocs Ltd.'s Clarify product suite. The mix of software required IT staffers to store duplicate sets of customer information in multiple databases, Barker said.

He added that the first year's cost for using NetSuite's software was under \$40,000—less than it would have cost to renew the company's Clarify license—and that covered twice the number of end users. In addition, Barker no longer needs to worry about hardware support, database tuning and software upgrades. "I'm asleep when the upgrades get applied," he said.

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"About a year and a half ago, Infact was a disparate set of companies around the globe, and our goal was process alignment to get us all singing

ROI Potential

Ratings of Hosted CRM vendors on the ability of their technology to deliver a return on investment to users, based on a score of 2 to 5:

COMPANY	SCORE
NetSuite	4.2
Siebel	4.0
Document Sciences	3.8
Clarify	3.6
Infact	3.5
Stamps.com	2.8

BASE: Ratings are composite scores based on an analysis of deployment issues, software usability, support resources, implementation requirements and vendor track records on ROI.

SOURCE: WATERSIDE MARKET RESEARCH INC.

off the same hymn sheet," Napier said. "But we're not a huge company and didn't have the time or infrastructure to deploy [CRM software]. We have to be smart and fast off the mark."

Even some of the big companies among the 10 hosted CRM users interviewed for this story think that way.

"We didn't want to get bogged down," said William Patten, director of sales and policy administration at

IN DEPTH

MARC BENIOFF



Sovereign Bancorp Inc. in Philadelphia. The \$60 billion bank began using sales force automation software hosted by Boston-based Salesnet Inc. two years ago. About 420 end users have access to the tools, according to Patten.

Salesnet CRM offers a simple seven-step sales methodology that "doesn't get in the way" of Sovereign's operations, Patten said. He added that the software is easy to use and flexible enough to handle business needs that are specific to the financial services industry. For example, Sovereign bolted on a customized incentive-payments utility to support its employee compensation processes.

Executives at Framingham, Mass.-based Staples weren't available last week to comment on their hosted CRM plans. However, Salesforce.com said Staples plans to roll out the applications in stages to workers in its contract sales division nationwide.

Quintiles, which reported \$1.3 billion in net revenue for this year's first three quarters, has been using Salesforce.com's software in one business unit since August 2002. A Quintiles spokesman said the Raleigh, N.C.-based company now plans to deploy the software to its sales and marketing teams worldwide, replacing a set of homegrown applications. The on-demand

nature of the hosted tools will let Quintiles scale up its use of them as needed, he added.

With those kinds of contracts in hand, Salesforce.com raised its revenue forecast for the fiscal year that ends Jan. 31 to as much as \$174 million — up from the previous range of \$165 million to \$170 million. It also provided initial guidance for fiscal 2006, saying it expects revenue to reach as much as \$285 million. That would represent a year-to-year growth rate of nearly 70%.

Not to be outdone, CRM market leader Siebel said this month that Deutsche Telekom AG's T-Systems International

GmbH subsidiary plans to deploy Siebel's hosted software to about 1,000 sales workers worldwide. CRM OnDemand will be integrated with an existing 2,800-user installation of Siebel's packaged applications at T-Systems, an IT services firm that also plans to market the hosted software to companies in Germany and eight other European nations.

Technical Shortcomings

The fact that more and larger companies are adopting hosted CRM software hasn't gone unnoticed by analysts. As a rule, though, big users are still keeping their distance from the technology because of well-placed skepticism about the ability to link hosted CRM applications to their in-house software and to support customizations through successive product releases, said Ian Jacobs, an analyst at Current Analysis Inc. in Sterling, Va.

"From the perspective of a smaller company, what's not to love?" Jacobs said. But if hosted CRM vendors want to continue going upscale, they will have to tackle some tough challenges, he added.

For example, Jacobs said that vendors need to offer expanded functionality, such as data quality services, without making the hosted technology too complex and thereby losing one of the features that differentiates their product from packaged applications.

Total cost of ownership is another issue that users need to consider, according to Jacobs. Hosted CRM vendors tout their offerings as being less expensive than packaged software, but Jacobs said that may not be the case when costs other than the purchase price are included in the equation. Gartner Inc. analysts made similar points in a report issued last May.

Hosted CRM sales total about \$200 million now, compared with roughly \$2.8 billion for licensed CRM software, said Erin Kinikin, an analyst at Forrester Research Inc. That makes the hosted approach "small potatoes in terms of revenue," Kinikin said. But she

Siebel's Strategy Gives Users Freedom of Choice, Exec Says

In senior vice president and general manager of Siebel's CRM On-Demand hosted software service and its development and marketing unit for small and midsize businesses (SMB), Siebel launched CRM On-Demand last fall in an effort to catch up to smaller and midsize online software vendors such as Salesforce.com.

Cleveland spoke recently with Computerworld about Siebel's two-pronged software strategy.

Didn't Siebel oppose launching a hosted offering for quite some time?



What's unique to your offering?

How do you think you stack up against Salesforce.com and your other competition?

Are you selling the hosted applications to the SMB market only?

But does CRM On-Demand fit into your license revenue stream for installed software?

added that hosted CRM sales are growing at an annual rate of 20% to 30%, while sales of traditional products are flat or declining.

One user who passed on hosted CRM is George Chappelle, CIO at H.J. Heinz Co. The Pittsburgh-based food

products maker runs Siebel 7.5 internally to help manage its promotional campaigns, and Heinz has also looked at hosted technology.

"But it's not very interesting," Chappelle said. "We already had the knowledge in-house." 

Hosted CRM Looks to Step Things Up

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COMPANY SCORE

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Siebel	3.8
ACCPAC International	3.6
NetSuite	3.4
The Savo Group	2.6
Entelium	2.6

BASE: Ratings are company scores based on an analysis of deployment success, ease of use, system requirements, potential business benefit and vendor track record on ROI.

Source: RightNow Technologies, Nov. 10, 2004.

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Benioff Sees Hosted Apps as 'the Future of Software'

It could be easily argued that

• Salesforce.com's chairman and CEO, has done more to promote the idea of hosted CRM and make it more credible than anyone else in the software industry has. Benioff, a former Oracle Corp. exec, *launched* Salesforce.com in 1999. Now the company claims that its hosted applications are used by about 12,500 customers with a total of 195,000 end-user subscribers. Benioff recently spoke with Computerworld about the hosted CRM market.

How have things gone since you went public in June? I think our business is very strong. We're starting to see one large company come to us for major implementations, such as SunGard Data Systems, SunTrust Bank, AXP and Cisco Systems. We're seeing a model where not only are we in other enterprises, we're in other enterprises. It's a tiered democracy. Very small companies, medium companies and even large mega-implementations are all done on the same piece of code.

Did Siebel's entry into the hosted CRM market validate Salesforce.com's offerings? If you go back and look at the history of all the things Tom Siebel said about us, I was that we won't be around in a year, this will never work, and big companies will not be interested in it. It's all on the record. Now

it is the future of software [for Siebel as well as for us], and that's interesting.

Do you think the number of vendors in the hosted CRM market will eventually shrink? Like in all

IN DEPTH

152 CIO



SONGINI

AT DEADLINE

Staff Cuts to Cost HP \$200 Million

Hewlett-Packard Co. plans to spend \$200 million on staff reductions over the next six months, the company said last week in a regulatory filing. HP didn't specify the total cuts or which business areas they would affect. HP has regularly adjusted its workforce since buying Compaq Computer Corp. In the first nine months of its 2004 fiscal year, HP reported restructuring costs of \$101 million. HP currently employs about 145,000 workers.

IBM Buys Insurance Processing Firm

IBM is acquiring Liberty Insurance Services Corp., the U.S. business process services operation of RBC Insurance. When the deal closes, LIS will become an IBM subsidiary focused on handling life insurance and annuity policy processing for several insurance companies worldwide. IBM bought the firm to capture part of what's projected to be a \$2 billion global market next year. IBM will retain the 700 LIS employees.

Citrix Makes Play For VoIP Presence

Citrix Systems Inc. last week agreed to purchase NetIQ Inc., a privately held maker of Secure Sockets Layer virtual private network technology, for \$50 million in cash. San Jose-based NetIQ has 30 employees. Citrix said the acquisition will boost its stable of secure remote-access technology and give the company a foothold in the voice-over-IP market.

Cingular Plans to Slash Force by 10%

Cingular Wireless LLC last week disclosed plans to cut about 10% of its 68,000 workers over a 12- to 18-month period starting next year. The company confirmed the layoff figure less than a month after completing its acquisition of AT&T Wireless Services Inc.

Users Still Victims of Oracle/PeopleSoft Saga

With resolution of takeover bid months away, the only certainty

BY MARC L. SONININI

EMBATTLED ERP software vendor PeopleSoft Inc. last week refused to capitulate in its long-running battle with potential purchaser Oracle Corp., despite the apparent will of a majority of shareholding users, keeping corporate users in limbo.

Pleasanton, Calif.-based PeopleSoft's board called on Oracle to raise its bid as Oracle appealed to PeopleSoft directors to lift their strong poison-pill anti-takeover mechanisms, which would likely make the deal unreasonably expensive for Oracle. A judge in a Delaware court has agreed to hear arguments in the case Dec. 13.

While the fate of the merger is still uncertain, recent events don't bode well for PeopleSoft users, who have struggled with the situation for months.

"What this means to customers is increased uncertainty caused by more legal wrangling," said John Mateloski, deputy CIO for the City of Orlando, a PeopleSoft shop. "It's comfortable with the products and services that PeopleSoft provides, and thus I remain hopeful that a merger/acquisition does not occur. Regardless of what the result is, it's in all parties' best interest that a rapid resolution occur."

John Schindler, CIO at lighting fixtures maker Kichler Lighting Group, a PeopleSoft shop in Cleveland, said, "Having now worked with Oracle E-Business applications as well as PeopleSoft in my career, I'm committed as ever to the quality and long-term ownership that PeopleSoft provides Kichler." He noted that the takeover effort is by no means over, as the proxy and poison-pill battles continue.

"Selfishly, I want PeopleSoft to survive as an independent company," Schindler said. "I believe Oracle is trying to buy a customer list and will ultimately kill off the PeopleSoft applications. I'm hopeful that this will die during the poison-pill phase."

PeopleSoft's board declined to accept Oracle's so-called best and final offer of \$24 per share, or \$9.2 billion, despite Oracle's claims that 60% of PeopleSoft stockholders tendered their shares in favor of the sale prior to its deadline of Nov. 19. Oracle called the shareholder vote a "mandate" for approval of its hostile bid to buy its competitor. "We believe it is time to bring this matter to a close, for the good of PeopleSoft's shareholders, customers and employees," said Oracle

Obstacles to Oracle's Bid for PeopleSoft

Chairman Jeff Henley as the votes were tallied.

But PeopleSoft's board has refused to budge and has retained the poison-pill mechanism. A George Battle, chairman of the PeopleSoft board's transaction committee, said in a statement issued after the vote that "we would be willing

to discuss an offer made by Oracle at an appropriate price—but \$24 is not that price."

At that point, Oracle responded that the two companies were "obviously at an impasse." Oracle's board had urged PeopleSoft to sell without having to shift the takeover fight to a Delaware court, which could force PeopleSoft to lift the poison-pill provisions, or to the shareholders via a proxy battle, which would take place next spring.

Although it looks like it will come down to a proxy fight, "this deal just moved one more significant step toward closing in Oracle's favor," said Joshua Greenberg, an analyst at Enterprise Applications Consulting in Berkeley, Calif.

Many users just want the two vendors to work out their differences, no matter what the result.

Greg Riley, a business systems analyst at Materna Inc. Telephone Association Inc., a PeopleSoft World shop in Palmer, Alaska, said, "If they are just fighting for the best dollar-per-share figure, they should be sitting down at the table with Oracle." © 2004

Oracle Plans to Add BI Offerings

ORACLE is maneuvering to bolster its business intelligence market share with new stand-alone query, reporting and analysis tools and an extension of the operational reporting in its applications suite.

At the Oracle OpenWorld user conference next week, the company will introduce an unbundled query, reporting and analysis tool set that was previously packaged with its application server, as well as enhancements to the Daily Business Intelligence (DBI) prebuilt operational reporting tool that ships as part of its E-Business application suite, said analysts who have been briefed by Oracle.

Robert Stimp, Oracle's vice president of technology marketing, declined to provide details about the announcements. However, Dan Vesel, an analyst at IDC who has been briefed

by Oracle, said the company is rebranding the query, reporting and analysis tools from its application server. The rebranded, stand-alone tools will be sold separately, Vesel said, and they will support more end-user customers.

"They are certainly making a bigger push in BI," Vesel said. "They were always focused very much on the database, and the surrounding BI tools were secondary. There is a realization that BI should be a separate revenue stream."

Pricing information wasn't available.

Oracle also plans to release specific connections to transactional tables and will be adding the ability to answer more reporting questions with query tables in DBI, said Keith Gile, an analyst at Forrester Research Inc., who was also briefed by Oracle.

"This is not meant to be a replacement for traditional data warehousing, but rather an extension to the application," Gile said. "It has limitations when it is compared to a full data warehouse but is a solid alternative to standard reporting."

Patrice Duez, president of the Oracle Applications Users Group and project officer for the Las Vegas city manager's office, welcomed the enhancements to DBI, which her office uses to report against Oracle purchasing, financial and human resources applications.

"It is a product that is of high interest to application users," she said. "I have seen some views already set up that are management-oriented, and [and] it's more advanced than your typical report writer. Usually, you have to have a database person set up these views; this product comes with a number of them already there."

—Heather Haverstein

HP Launches Software Automation Manager

BY MATT HAMBLETON

Hewlett-Packard Co. tomorrow will unveil a management automation software product and a new version of its help-desk software at its annual European user conference, Software Universe, in Madrid.

The new HP OpenView Automation Manager product replaces the pricey Utility Data Center offering the company dropped last month (Quick-Link 49774), analysts said. It includes technologies HP got when it acquired Novadigm Inc. and Consent Software early this year, as well as business intelligence software from HP Labs.

Automation Manager, which will ship in January, gives CIOs an automated predictive system for managing the IT

services of a corporation, said David Gee, HP's vice president of worldwide software marketing. When demands change, the software automatically optimizes the configuration of services and applications to match preset service levels, he said.

Model-based Automation

For example, Gee said, if a corporation needed to add 1,000 e-mail users, the product would help model the process involved and automate the setup based on the projected length of the process and the desired level of e-mail performance.

At its heart, the new software relies on "model-based automation" instead of building the automation from basic

scripts, he said. "It's a lot more flexible and robust," Gee said.

Frank Gillett, an analyst at Forrester Research Inc., said the offering is an important product for HP that is "in effect a replacement for the Utility Data Center." The UDC hardware/software bundle was priced in excess of \$1 million and was called very complex by analysts. "Before this, HP had basically a muddle strategy where they wanted you to buy UDC and software," said Gillett.

Michael Hanzlick, project manager at T-Systems International GmbH, the Frankfurt-based networking branch of Deutsche Telekom AG, said he will test Automation Manager once it's available. The product should help make management

of systems more precise, he said, adding that he isn't sure which features are most important.

T-Systems has been using OpenView products since 1996, gradually adding features as its global network grew to 350 locations with 3,500 servers and 68,000 clients. T-Systems added Novadigm management tools two years ago, and Han-

NEW PRODUCTS

HP OpenView Automation Manager

- Manage Microsoft Windows and Linux blade servers
- Support for HP-UX to come
- Costs \$1,000 per server, or \$1,800 per server bundled with HP OpenView tools

zlick said he expects the integrated products to better manage the operation.

"It's ideal that HP and Novadigm work together," said Hanzlick. T-Systems uses Novadigm to create a "desired state model" of how a process should run in the event of changes in system usage.

Stephen Elliot, an analyst at IDC, said Automation Manager will provide a tighter integration of OpenView products. But, Elliot added, "I wouldn't say it's better or different" than products from competitors such as Computer Associates International Inc. or IBM's Tivoli Software unit.

HP is also expected to ship HP OpenView Service Desk 5.0 in mid-2005. It will feature a new Web-based graphical user interface and standard reports, as well as service-level agreement templates. **SH075**

H-1B Backers Want Bigger Increase in Cap

BY PATRICK THIBODEAU

The 20,000-visa increase that Congress added to the fiscal 2005 H-1B cap just before its holiday break left no one involved in the contentious issue happy, and IT trade groups said they will try to further raise the cap next year.

The proposed legislation, which was included in the omnibus federal budget bill approved over the weekend prior to Thanksgiving, would allow foreign nationals with master's and Ph.D. degrees from U.S. universities to apply for H-1B visas during the government's current fiscal year.

The current cap of 65,000 visas was reached on Oct. 1, the first day of the fiscal year.

Trade groups and IT vendors such as Microsoft Corp. and Intel Corp. had urged Congress to raise the fiscal 2005 cap, as had technology users such as The Goodyear Tire & Rubber Co. Despite the vote to do so, some H-1B proponents said that the legislators didn't go far enough.

"The number of additional H-1B visas needed this year is closer to 50,000," said John Palafoutas, a senior vice presi-

dent at the AEA, a Washington-based trade group. Large numbers of students graduating from U.S. universities with advanced degrees in fields such as computer science are foreign nationals. Proponents of the cap increase argue that it's in the nation's best interest to keep these skilled graduates here and that an H-1B visa is a path to permanent residency.

But opponents say that's not necessarily the case.

Path to Green Card?

Many employers "don't use the H-1B visa to bring people into the U.S. and keep them here," said Ron Hira, an assistant professor of public policy at the Rochester Institute of Technology in New York. Often, IT service firms simply need to add workers at customer sites, according to Hira. "They're not trying to sponsor people for green cards," he said.

That's true at Tata Consultancy Services Ltd., a Mumbai, India-based IT services firm with operations worldwide. Tata has about 8,000 employees in North America, primarily in the U.S., and about 7,200 of them are here on some kind

of visa. Among its U.S. workers, about 65% have H-1Bs, and the remainder hold L-1 visas, said spokesman Victor Chayet.

He added that many of Tata's U.S.-based employees are graduates of universities in India and that only a handful ever seek permanent residence here. The company doesn't discourage workers from applying for green cards, but it's service delivery model is based on the ability to move people from country to coun-

try as needed. "Keeping that fluid workforce is to our benefit," Chayet said.

Groups representing high-tech workers opposed any increase in this year's H-1B cap.

Al Gray, executive director of the National Society of Professional Engineers in Alexandria, Va., said current indications are that there are "no really serious shortages" of engineering and IT workers.

But Joann Smith Bers, managing director of DB Marketing Technologies LLC, a consulting firm in New York,

said she has had trouble finding job candidates from U.S. schools who have strong math and statistics training and who understand business.

"I would like nothing better than to hire Americans for these positions," she said. "My challenge is that the people who have the education and the background are coming from abroad." **SH062**

MORE ONLINE

Visit our H-1B special coverage page
www.computerworld.com
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L-1 Visa Users Face New Restrictions

ALTHOUGH Congress nixed the H-1B cap, it approved new restrictions on the L-1 visa program, which some critics view as a private vehicle for shifting U.S. jobs to lower-paid workers.

L-1 visas let multinational corporations relocate employees to the U.S. through intracompany transfers. But legislators and IT job activists who used to warn in the L-1 program claim that some companies use the visa to bring in foreign workers to either replace existing employees or contract out to other businesses.

The latter practice is what the change proposed by Congress is intended to stop. Specifically, the measure would require that any "specialized knowledge employee" brought to the U.S. on an L-1 visa be controlled and supervised by the company that submitted the visa petition.

John Baum, president of The Organization for the Rights of American Workers, a Meriden, Conn.-based group formed by laid-off high-tech workers, said the legislation should have a major impact.

Baum said that even if U.S. workers lose 20,000-plus because of the proposed increase in the H-1B visa cap, "they may gain 200,000 on L-1—not being able to work at a third party."

But others aren't so sure. "Whatever kind of law is passed, someone will find a way around or over or through it. So it's a matter of interpretation and how companies adapt to these new restrictions," said Vin O'Neill, senior legislative representative of IEEE-USA, a unit of the Institute of Electrical and Electronics Engineers Inc. in Washington.

—Patrick Thibodeau

BRIEFS

IBM, Honeywell in \$250M Tech Pact

IBM and Honeywell International Inc. last week signed a 10-year engineering and technology services deal worth up to \$250 million. The agreement gives Honeywell access to IBM's engineering expertise and is designed to speed Honeywell's production of network-centric battlefield components and systems. IBM will receive military and aerospace resources and expertise, as well as access to avionics and vehicle electronics customers.

Saab Taps Hyperion For Finance Project

Saab AB has agreed to install Hyperion Solutions Corp.'s Financial Management application to replace its internally developed consolidation system and spreadsheet-based reporting system. Financial details weren't disclosed. Saab executives said they expect the software to improve the flexibility of the defense and aerospace company's reporting system.

Linux Desktop Effort Gets a Boost

Scalix Corp., a maker of desktop applications for Linux systems, joined Open Source Development Labs Inc. in an effort to help push the spread of desktop Linux. Scalix makes Linux-based e-mail and calendaring applications. The non-profit OSDL, formed to foster the spread of Linux into the enterprise, claims several top system and software makers as members.

Systemcorp Joins IBM's Rational Unit

IBM last week said it has completed its acquisition of Systemcorp, a manufacturer of project portfolio management software. Financial details weren't disclosed. Systemcorp's 70-person operation in Montreal will be integrated into IBM's Rational unit. IBM will ship Systemcorp offerings in 30 days.

C ON THE MARK

HOT TECHNOLOGY TRENDS, NEW PRODUCT NEWS AND INDUSTRY GOSSIP BY MARK HALL



to users. Expect the lawyers to complete the SPLA tome in the spring, Thacher says. If, er, when it's completed, look for the percentage of subscription-based users to rise dramatically. Thacher says to also expect expanded reports in the next release of Microsoft CRM, thanks to the addition of new SQL Server Reporting Services functionality. A good guess is that the CRM unit's 200 developers will beat Microsoft's myriad lawyers and deliver the update in early 2005, ahead of the SPLA.

Don't lose business due to Web site errors . . .

... that discourage online visitors. Fix the errors and save a bunch of dollars on your IT costs, advises Mike Gabrys, co-owner of BikeSmart.com, the online retail arm of Mike's Bicycle Center of Northern California in San Rafael. Everything on BikeSmart's Web site is customized. "And we like it a lot," Gabrys says. But customization made it harder to troubleshoot and remediate persistent 400- and 500-class errors that the Web site was generating. In addition, the site's response time was disappointing, he says. At first, BikeSmart's developers thought the problem was in the company's ColdFusion-based online shopping application. But after installing an Xfire Web site monitoring appliance from Xfire Inc., they discovered a flaw in their MySQL database implementation that was causing most of the problems.

One of the biggest benefits BikeSmart has realized since installing the monitoring device is that lower-level IT staffers

On Sarb-Ox, Savvy IT Shouldn't Overlook . . .

... what's under the covers of a fully compliant technology asset base. "That's especially true in the financial industry," says Ed Chopskie, vice president of enterprise technical marketing at San Diego-based Peregrine Systems Inc. Pointing to the "safeguarding of

assets" section of Auditing Standard No. 2, Chopskie asserts that auditors will be keen to look at all internal operations that could "have a material effect on the company" in the financial services industry, which is heavily dependent on IT, virtually everything will face the auditor's sniff test, he claims. Chopskie says he expects that in addition to the obvious workflows and controls built into finance-related systems, auditors may nose around your IT procurement processes or the state of your software license compliance.

Let's imagine that critical software you use relies on the continued viability of a vendor in Chapter 11, or that you have only one licensed copy of Microsoft Office, but it's installed on 10,000 desktops. Either situation could materi-

can use it to solve problems, freeing senior developers to work on other projects, Chopskie says. David Jilk, CEO of Xfire in Superior, Colo., says Version 3.2 of the Xfire software will be released for beta-testing this week. It will add filtering capabilities and the ability to store the information it gathers in relational databases. Xfire pricing starts at \$20,000.

Database unlocks performance . . .

... bottleneck in traditional relational systems. Kenneth Ruotolo, chief financial officer at Burlingame, Calif.-based Amts Software Inc., says that much like the QWERTY keyboard was designed to slow down typists, RDBMS technology hailing from the late 1970s and early 1980s used "sequential locking" as a way to slow down transaction processing. That was done because the databases had to contend with tiny network pipes and time-sharing environments, he explains. Ruotolo claims that his company's Amts Data Server processes all transactions in parallel and "virtually eliminates" locking. Plus, he says, the software was designed to take advantage of huge amounts of memory as well as disk space, so it can use an entire storage-area network as its database memory if necessary. Amts Data Server 2.5 is due in the first quarter of 2005 with support for systems based on Advanced Micro Devices Inc.'s Opteron chip. The software costs \$25,000 per CPU.

© Xfire

Xfire monitors relational Web sites.

New
SQL Reporting
Supports data

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CIOs, Recruiters Split On IT Job Prospects

CIOs say full-time hiring remains flat but contract workers are still in demand

BY THOMAS HOFFMAN

RECruitment agency officials and corporate CIOs are painting very different pictures of the current outlook for IT hiring.

More than a dozen CIOs and corporate recruiters interviewed last week said their organizations are being prudent about adding full-time IT workers in order to hold down expenses. These companies are typically opting for contract workers to help meet their near-term project and support requirements.

At the same time, executives at recruiting agencies said at this month's Recruiting 2004 Conference in New York that

job postings for IT workers have reached the highest levels since the dot-com bust in 2001, signaling a rebound in the U.S. IT job market.

Dennis Callahan, CIO at The Guardian Life Insurance Company of America, said "we're close to flat in permanent staff from year to year." Any near-term additions to New York-based Guardian's 405-person IT staff — which is augmented by 200 offshore IT consultants — will focus on replacing workers who leave and hiring specialists in technologies like WebSphere and IT security, Callahan said.

Wyndham International Inc. has no plans to expand its 62-person IT department with

more full-time staffers, said senior vice president and chief technology officer Mark Hedley. Instead, the Dallas-based hotel chain will round out its workforce with contract workers as needed to meet peak demands. "We have taken a conservative approach on the economy and will match our IT spending with the growth of the company," Hedley said.

Mixed Outlook

That's consistent with the sentiment of other CIOs as economic forecasts continue to be mixed. For example, while some signs, such as the stock market's recent rise, have been positive, a composite index of economic indicators compiled by The Conference Board Inc. fell in October for the fifth consecutive month.

An uncertain economy is a

key reason for the increased use of contract IT workers, said conference attendee Peter Weddle, CEO of Weddle's, a research, publishing and recruiting consultancy in Stamford, Conn.

Rick Stockfield, managing partner at Talentire.com, an Atlanta-based business-to-business online recruiting exchange, said demand for IT workers has increased over the past three to six months. Stockfield cited particularly strong demand for IT auditors in response to the Sarbanes-Oxley Act, as well as demand for IT security experts.

While many CIOs remain cautious about adding to their payrolls, there are exceptions. For instance, Science Applications International Corp. in San Diego plans to increase its IT staff by a whopping 29% by early next year — from 356 to 762 workers — by adding both full-time and contract employees and by partnering with business units that deliver systems to customers, said CIO Cora Carmody. The company is hiring people with a broad

range of skills, including architects, software developers and business analysts.

Juniper Networks Inc., a networking equipment vendor in Sunnyvale, Calif., expects to have an IT staff of 140 people by the end of the year, up from 70 it had prior to its April acquisition of NetScreen Technologies Inc., said CIO Kim Perlikow. The company added 35 IT personnel from NetScreen and expects to hire 15 more by year's end to help support its growth. Perlikow estimated that Juniper will grow its IT staff by another 10% to 15% in 2005.

Truman Medical Centers Inc. has a few openings for full-time IT workers, said CIO Bill McQuiston. But he said what's most concerned about the Kansas City, Mo.-based organization's ongoing use of contract IT workers to meet some of its short-term needs. The contract workers can't always transfer their knowledge to the health care company before they complete their assignments, McQuiston said. © 8102

CIOs Take Steps to Keep Pace With Change

New requirements muddle the search for top talent

BY LUCAS MEARIAN
COLUMBUS, OHIO

When recruiting a new CIO, companies look mostly outside their own walls because they lack confidence in internal IT management. Many CEOs fear the internal candidates lack well-rounded experience, a technology recruiter told about 150 CIOs gathered at the 2004 CIO Symposium here this month.

Several Fortune 25 CIOs spoke of their rapidly changing profession and of the search for a new breed of IT managers. The goal is to develop those managers internally, but that goal hasn't been met, they said.

"The one thing we found that companies don't do too

well is engage their future leaders," said Gerry McNamara, senior partner at financial services and technology recruiting firm Heidrick & Struggles International Inc. in Chicago. In a speech at the symposium, McNamara said most companies are sorely lacking in IT leadership training programs.

A Heidrick & Struggles survey of its U.S. clients found that 60% of Fortune 250 companies hire outside talent as chief technologists, and 70% of companies use profile testing to help identify the ideal IT manager rather than turn to internal talent.

The findings weren't surprising to CIOs attending the conference, hosted by the Columbus Technology Council and Ohio State University.

Several CIOs from large companies acknowledged the need for better training of IT

managers, particularly when it comes to understanding the business side of the company and managing projects.

Joseph Calvaruso, CEO of Mount Carmel Health System in Columbus, instituted a leadership development program in July 2000 to address a 24% annual employee turnover rate at his operation. "Employees join organizations, but they leave managers," he said. After the program was implemented, the attrition rate dropped to 4% this year, Calvaruso said.

Dealing With Mergers

Jody Davids, CIO at Cardinal Health Inc. in Dublin, Ohio, a distributor of medical supplies and equipment, said the biggest technical challenge facing CIOs in large enterprises is integrating multiple lines of business after mergers and acquisitions, a task that demands business expertise

from the CIO and the managers he hires.

Cardinal Health is a year into a 24-month business and IT realignment to pull together more than a dozen companies that has acquired over

Attention CIOs: Look For Prospective CIOs

- The ability to be a dynamic business partner
- Giving business and technical acumen
- Cross-functional experience
- The ability to generate competitive advantage
- Experience managing a small center
- Leadership and team-building skills
- International experience

Source: Heidrick & Struggles International Inc., Atlanta

the past decade. "You cannot lead with technology. There needs to be some understanding of the business [by IT managers] if the investment is going to be wisely made," she said.

Davids also advised her counterparts to "decide decisively with those who cling to the past" and won't change as needed.

John Deane, CIO of Wendy's International Inc. in Dublin, Ohio, said he has seen a dramatic change in corporate expectations as CIOs are changing "from someone who is technical in philosophy to someone who is a value creator. CIOs are [becoming] part of the strategic process."

"You need people in your organization who understand business first and IT second," added Fred Siff, CIO at the University of Cincinnati. IT managers must be able to help create business value and competitive advantage, he added. © 8109

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"For midsized and large organizations, a significant Linux deployment will neither be free nor easily accomplished. In fact, respondents at large organizations reported that a wholesale switch to Linux from Windows® or Unix would significantly increase TCO for the foreseeable future."

*—Laura DiDio, The Yankee Group, April 2004
Linux, Unix, and Windows TCO Comparison*

The Yankee Group, a global research and consulting firm, concluded that a significant switch to Linux from Windows or Unix could cost three to four times as much without delivering tangibly better performance or business value. These findings are based on a non-sponsored worldwide survey of 1,000 IT administrators and C-level executives in midsized and large enterprises.

To get the full study, visit microsoft.com/getthefacts





GLOBAL

An International
IT News DigestU.K. Mulls Unplugging
Faulty EDS System

LONDON

CONTINUOUS COMPUTER failures at the U.K.'s Child Support Agency have led the agency's chief to resign and prompted the government to consider scrapping a welfare case management and telephony system developed mostly by Electronic Data Systems Corp.

At a parliamentary committee hearing on Nov. 17, Doug Smith, chief executive of the Child Support Agency, said he's "seriously disappointed" that just 61,000 out of 478,000 single parents have received payments from the system and that \$2.4 billion worth of support payments remain uncollected. Smith said he's resigning from his job.

Alan Johnson, secretary of state of the U.K. Department of Work and Pensions, which oversees the agency, said he's considering the "nuclear option" of pulling the plug on the system. Launched in March 2003, the system includes a Java-based application written

by EDS and call center software created by BT Group PLC. The parliamentary committee issued a damning report about the system in July [QuickLink 40246]. During the hearing, Johnson read from what he said was an internal EDS memo that described the system as "badly designed, badly delivered, badly tested and badly implemented." A representative from EDS U.K. declined to comment or to confirm the legitimacy of the memo.

■ LAURA ROHDE, 106 NEWS SERVICE

Start-up Claims
Low-Cost RFID Chip

AUCKLAND, NEW ZEALAND

A START-UP VENDOR called Sand-tracker claims to be on the verge of cracking the 5-cent cost barrier for radio frequency identification (RFID) tags. The Auckland-based company is producing a low-silicon chip that can be made for 6 cents and contains only a number identifying the goods that are tagged.

Sand-tracker said the tags are being tested in

GLOBAL FACT

Number of Wi-Fi sessions
per week at the British
Library in London.

several applications. A sports-event company is putting the cheap tags on the number bibs of runners to count how many cross the finish line during races. Another customer is using a special RFID assembly across the closure of crates and containers. Any tampering triggers an alarm, Sand-tracker said.

Some versions of the tags don't conform to the emerging Electronic Product Code standard, but Sand-tracker said it plans to work with the EPC standards body on the new chips.

■ STEPHEN BELL

COMPUTERWORLD NEW ZEALAND ONLINE

Intel to Spend \$40M
On India Chip Center

BANGALORE, INDIA

INTEL CORP. said on Nov. 19 that it will invest \$40 million over the next two years at its 43-acre development center in Bangalore. That's on top of a similar investment in the past two years.

The new funding will be used to develop next-generation Centrino chip sets, laptop motherboards and Windows-based graphics drivers. The center will also develop enterprise-class microprocessors, including work on all of Intel's chips that support very large-scale integration technology. ■ **SHOBHITA**

■ JOHN RIBBLEY, 106 NEWS SERVICE

Compiled by Mitch Betts.

Continued from page 1

CA

preferred the conference to be held in April, prior to CA's scheduled release of upgraded help desk software. "By fall, the new releases will already be out," said Smith, who is president of the Mid-Atlantic Help Desk User Group for CA customers.

Tyler McGraw, a database administrator at paper maker Bowater Inc. in Greenville, S.C., said CA's change of heart on the 2005 conference was "a good thing." McGraw has used CA's Ingres database for the past 15 years and was buoyed by the company's decision, announced at CA World 2004 in May, to release the software under an open-source license [QuickLink 47216].

Waiting until 2006 to hold the next CA World could have stopped the momentum

of open-source Ingres among end users in its tracks, McGraw said. "Obviously, Swanson made his decision to have it in the fall because many people felt the same way," he added.

Swanson, 50, was added to CA's board and given the title of president and CEO-elect for the time being. At his most recent job at IBM, he served as vice president of the company's worldwide software sales force. Prior to that, he was general manager of the application integration tools and middleware division within IBM's software group.

Interim Period

According to CA, Swanson will report to interim CEO Kenneth Cron during a transition period that's expected to last four to six months. Swanson will initially focus on product strategy and development, while Cron oversees the other parts of CA's business.

Jeff Clarke, CA's chief operating officer and chief financial officer, will report to Cron during the transition period. Clarke, who joined CA last March, is responsible for sales, marketing, business development and finance.

Cron has been interim CEO since April, when Kumar was stripped of his chairman and CEO titles as federal regulators and prosecutors investigated CA for alleged accounting irregularities. Kumar was subsequently named chief software architect but then left CA in June. In September, he was indicted on charges of securities fraud, conspiracy and

obstruction of justice, to which he pleaded not guilty [QuickLink 49647].

During a teleconference last week, Swanson said he wants to increase CA's share of the market for enterprise management software. "We have an opportunity to grow that lead and expand into new markets and niches... like wireless," he said.

But Swanson acknowledged that CA's relations with users often have been problematic. "There's clearly a legacy here of difficult customer relations. I'm looking to turn customers back into partners rather than adversaries."

JON SWAINSON.
CA's president and
CEO-elect



"I'm looking to turn customers back into partners rather than adversaries."

Kumar was credited by many

CA users with improving relations, and Smith said he hopes Swanson can keep alive the former CEO's "strong sense of what customers are after."

Swanson said that he's "not looking to dump products" and that CA is committed to supporting its software. But, he added, not every one of CA's 500 or so products "represents the strategic future of how customers want to build and manage their enterprises."

"I'll be interested to see what he does," said McGraw, who noted that CA "has a lot of competing products."

Swanson's hiring is "a good win for CA," said Stephen Elliott, an analyst at IDC. Elliott added that Swanson is a "very credible, very senior choice" who likely will help pick up the pace on software acquisitions "after CA flushes out where they are in product lines and where they want to take the company." ■ **SHOBHITA**

Briefly Noted

BAA PLC, a London-based airport operator, plans to use enterprise service bus (ESB) technology developed by Sonic Corp. in Bedford, Mass., to integrate flight, baggage and passenger information systems at Heathrow Airport's Terminal 5, which is under construction. BAA also tapped Sonic ESB to support its overall service-oriented architecture.

NetSuite Inc., a hosted applications vendor in San Mateo, Calif., announced a move into the Canadian market as it opened a 40,000-square-foot facility in Mississauga, Ontario. NetSuite said it hosted CRM, ERP and e-commerce applications have been adapted for the Canadian market's business terminology and accounting standards.

The International Moscow Bank in Russia has selected Flexizone banking software from i-Fex Solutions Ltd. in Mumbai, India, as part of a technology modernization drive.

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An International IT News Digest

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CA users with improving relations, and Smith said he hopes Swainson can keep alive the former CEO's "strong sense of what customers are after."

Swainson said that he's "not looking to dump products" and that CA is committed to supporting its software. But, he added, not every one of CA's 500 or so products "represents the strategic future of how customers want to build and manage their enterprises."

"I'll be interested to see what he does," said McGraw, who noted that CA "has a lot of competing products."

Swainson's hiring is "a good win for CA," said Stephen Elliott, analyst at IDC. Elliott added that Swainson is a "very credible, very senior choice" who likely will help pick up the pace on software acquisitions "after CA flushes out where they are in product lines and where they want to take the company." © 51047

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Tools Bring Desktop Features to Browsers

BY HEATHER HAVENSTEIN

Macromedia Inc. and Nexaweb Technologies Inc. have brought out upgraded XML

development offerings with updates for building thin-client applications with rich features native to the desktop.

Cambridge, Mass.-based Nexaweb this month enhanced its Nexaweb Client 3.3 tool with support for searching

XML and the ability to take part of the application off-line, said CEO Larry Geisel.

Meanwhile, San Francisco-based Macromedia this month began shipping Flex 1.5, the latest version of its presenta-

tion server and application framework, with improved data display and visualization, more versatile skinning and styling, and support for new systems.

Geisel said Nexaweb plans to update its Nexaweb Studio add-in for third-party integrated development environments (IDE) by adding a visual JavaServer Pages (JSP) editor. It also plans to add a .Net client and open-source access to the Client engine by next year.

The Nexaweb tools can run in any J2EE application server, allowing developers to use JavaBeans, JSP and other coding structures to build XML user interfaces for Internet applications that need rich features like drag and drop.

Best Western International Inc. in Phoenix used Nexaweb's tool set to replace an HTML-based reservation, room rate and inventory application. An XML-based user interface reduced the time the system takes to respond to changes made at the company's 4,000-plus properties from 15 seconds to two seconds, said Harold Dibler, managing director of application development at Best Western. The interface also reduced network traffic by more than 90%, he said.

Macromedia Flex 1.5 allows developers to use a text editor or IDE to build rich-client applications, said Jeff Whatcott, Macromedia's vice president of product marketing.

Rotech Healthcare Inc., a medical equipment maker in Orlando, used Flex to build an Internet application for collecting orders and linking to billing systems via a controlled user interface. "You are able to make it look like what people are used to in a Windows application," said Michael Prichard, Rotech's IT manager.

Tim Farmer, software development manager at Choice Home Inc. in Arlington, Texas, said his Microsoft-centric development staff used Flex to build a user interface for a dashboard application in about a week, which was much quicker than it would have taken without the tool. **© 50997**



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DAN GILLMOR

Priorities Are Askew At the FCC

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But like the slate of airwave censorship cases, such regulatory overreaching is a threat to basic freedom of speech. Now Howard Stern is taking his act to satellite — an act that I personally find distasteful, but not nearly as worrisome as the bluebones who want to censor it — look for moves to regulate cable and satellite transmissions, too.

We all have a slate in freedom of expression. But even if some of us don't care about that, these trends are bad for business, too. If technology innovators need permission to market inventions, as the copyright holders and their friends in Congress and the FCC seem to believe, then we'll get less innovation. And we'll all suffer if that happens.

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MICHAEL H. HUGOS

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(each with its own internal systems) that band together to serve national accounts bigger than any single member can handle alone.

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A Voting Solution

AGREE WITH Dan Gilmor about the need to develop open-source software voting applications

"Flawed Vote Could Give It a Black Eye," QuickLink 50248. But I think it's unfair to place a majority of the blame for the crummy state of voting technology on IT projects fail for many reasons, but unrealistic expectations by those both inside and outside of IT often push a project into the bit-bucket or allow the implementation of projects that should have ended up in the bit-bucket. Unrealistic delivery dates and expectations are but two reasons why IT projects fail completely or provide

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Irving, Texas

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2

Prepare for converged networking. Download "Rethinking the Building Blocks of Your Network," our latest white paper from The Tolly Group, at www.gobroadcom.com/convergence



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Guarding the Grid

Grid computing architectures have a way of amplifying the security issues that companies routinely deal with in nongrid environments. So it's important not to overlook those vulnerabilities when deploying grids, users say. [Page 32](#)

QUICKSTUDY

Digital Light Processing

This system for projecting images, based on a unique optical semiconductor chip from Texas Instruments, contains millions of tiny mirrors that are individually moved by digital signals in synchronization with a light source and color wheel. [Page 34](#)

SECURITY MANAGER'S JOURNAL

VPN Evolution Progressing to SSL

One VPN technology is decommissioned, but the replacement causes new problems, writes Mathias Thurman. Secure Sockets Layer offers some answers, but there are still problems to be resolved. [Page 36](#)



MESH MOVES INTO THE WIRELESS OFFICE

OUTLOOK: Nascent 802.11 meshes make network installs and changes a snap. But compared with traditional wireless LANs, mesh networks have throughput limits and, for now, lack multi-vendor interoperability.

BY JOANIE WEXLER

A COSTLY AND COMPLEX aspect of today's wireless networks can sometimes be the very component they're supposed to eliminate: cabling. Emerging 802.11-based mesh networks attempt to resolve this irony by using more radio spectrum and less wire in the form of Ethernet cabling than traditional wireless LANs.

These are early days for WLAN meshes, but proprietary infrastructure products are commercially available. Organizations with difficult-to-cable environments and those that frequently move their WLAN nodes are among mesh's early adopters.

A wireless mesh infrastructure is, in effect, a router network minus the cabling between nodes — with the inherent resilience for fault tolerance that such networks deliver. It's built of peer radio devices that don't each have to be cabled to a wired port like traditional WLAN access points (AP) do. Rather, each simply plugs into an AC power supply. It automatically self-configures and communicates with other nodes over the air to determine the most efficient multipath transmission path.

Today, the way these functions work is unique to each vendor. So enterprises that build mesh networks will likely

use one vendor for a few years until standards are in place.

"Mesh is a reasonably important enterprise architecture going forward, because it dramatically simplifies installation," says Craig Mathias, a principal at Farpoint Group, a consulting firm in Ashland, Mass. "You take a node out of the box, plug it into the wall — end of discussion."

Supplying power to a mesh node can still be problematic. However, electrical outlets are usually far more abundant in buildings than Ethernet ports are, Mathias notes.

Only devices at the very edge of the wireless mesh hit wire — either to connect

Continued on page 30

EMERGING TECHNOLOGIES

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2

6 You take a node out of the box, plug it into the wall - end of discussion.

**CRAIG MATTHEWS, PRINCIPAL,
FARPOINT GROUP**

Continued from page 27

nect to a network switch or to stand-alone cabled devices such as printers and video cameras.

A design goal is to minimize the number of those wired devices and allow network managers to easily move wireless nodes as needed for capacity and coverage.

In a wireless mesh network, as devices are added and moved, the network automatically discovers topology changes and adjusts traffic-forwarding paths to optimize throughput.

Urology Clinics of North Texas replaced a traditional WLAN with a meshed Access/One system from Strix Systems Inc. in Calabasas, Calif., for just this reason. "We had intermittent problems with interference and shifting coverage holes," explains Kyle Nash, IT manager at the Dallas-based facility. This required him to frequently

move APs to tune the network, which was laborious and time-consuming because cabling ran from each AP to an Ethernet switch.

"Now I just move APs on the fly. This means the network is up longer. It will also make things much easier as our network continues to expand," says Nash, whose goal is for the five-office, 200-plus user facility to eventually be about 90% wireless.

Early Players and Users

The flexibility provided by mesh networks is particularly helpful over large geographic areas and in hard-to-wire buildings. Cisco Systems Inc., for one, says it helped kick off the effort to develop the IEEE 802.11s mesh networking standard when it discovered that some of its customers were running Cisco Aironet APs in "repeater mode," whereby one AP backhauls packets to another.

"This was happening in large warehouses where customers either couldn't get to a location or were running into Ethernet's 100-meter cabling limitation," says Jon Leary, product line manager in Cisco's wireless networking business unit.

Similarly, consider hospitals using the services of Shared PET Imaging LLC in Canton, Ohio. The company offers mobile positron emission tomography (PET) diagnostic medical imaging services to facilities that can't support the service full time in-house.

Mobile scanning labs are equipped with an \$800 Firetide Inc. 802.11b Hot-Point mesh router attached to a PET scanner. The router in the mobile coach communicates images to another router inside the hospital, where they are relayed to a reader, says Marc Simms, director of IT at Shared PET. Previously, the company dragged Category 5 Ethernet cabling outdoors after drilling a hole in the building.

Simms describes the cabling as "flaky and susceptible to weather." In one instance, cabling beyond the 100-meter Ethernet limit required the installation of more costly fiber optics.

Simms says that before the company took the wireless mesh approach, an installation with a new customer took four to eight weeks and cost \$2,000 to \$4,000 — or \$10,000, if fiber was involved. "Now, setup time is about an hour," he says.

Strix and Los Gatos, Calif.-based Firetide are the two mesh vendors that have made the greatest enterprise inroads. Firetide focuses strictly on wireless backbone applications — the company added 54Mbps/sec. 802.11a nodes to its portfolio this month — while



Strix builds nodes that perform double duty as wireless backbone routers and traditional WLAN APs.

Strix supports 802.11a/b/g in a modular, stackable mode that costs \$800 to \$900. It also uses the faster, shared 54Mbps/sec. 802.11a or g for backhaul and 802.11b for user access. In addition, Strix says it can use the proprietary 802.11g channel-bonding mode supported in some WLAN chips to achieve 108Mbps/sec. optimum-shared bandwidth.

Like Strix and Firetide, Tropos Networks Inc. in San Mateo, Calif., makes both indoor and outdoor Wi-Fi mesh products that could be used by enterprises or public network operators. To date, though, Tropos products have been installed in metropolitan applications, such as citywide 802.11 hot-spot networks.

Similarly, Nortel Networks Corp., which began shipping mesh products last month along with BelAir Networks Inc. and RoamAD, focuses on outdoor applications such as municipal and campus backbones. Like Strix, Nortel mesh nodes also support traditional AP access, and Kanata, Ontario-based BelAir's products offer indoor coverage from the same, outdoor-mounted

node. Nortel provides indoor WLANs via a product line from Aircospace Inc., which it resells.

The enterprise applications for mesh are fairly targeted, given the relatively low speeds of Wi-Fi networks compared with gigabit-speed cabled Ethernet backbones. The actual throughput speeds of Wi-Fi are about one-half to two-thirds of their stated optimum bandwidth because of wireless overhead and interference.

Generally, adding more mesh nodes increases capacity. However, Wi-Fi bandwidth is shared, and while both Strix and Firetide cite per-hop latency of less than 5 msec, this could add up as meshes scale, particularly as voice applications emerge and more hope eat into the total voice-latency budget.

Throughput Considerations

"The concept of sustained (wireless mesh) backbone bandwidth is not applicable," says Sunil Dhar, director of product management at Firetide. "End-to-end throughput is determined by the number of wireless hops required to traverse the mesh, the density of the mesh deployment and the amount of interference."

"For backhaul, you're going to pay,

performance-wise," says Yuval Goren, a wireless consultant at Goren International in Saratoga, Calif. "Mesh is for applications where you can't get access wherever you want, such as temporary applications where it makes no sense to pay thousands of dollars to run cables."

The Computer History Museum in Mountain View, Calif., has such an application. When the previous occupant vacated the building a few years ago, it cut most of the Ethernet cabling out of the 120,000-square-foot building.

So the museum is using Firetide nodes for temporary exhibits and outdoor events, where generator power is used, and in small, inaccessible areas indoors, according to Mike Walton, the museum's director of IT.

The Computer History Museum runs a Hewlett-Packard Co. AP infrastructure hanging off the Firetide 11Mbps/sec. backbone, which serves places such as the lobby for event registration.

"The lobby had no options for an Ethernet drop. Now, if I want registration computers, all I have to do is plug a [Firetide] node into an electrical outlet," Walton says.

Similarly, The Science Place, an interactive museum in Dallas, has exhibits requiring both LAN and Internet access that are frequently moved. The 38,000-square-foot, two-building facility has 20-foot ceilings, 6-foot limestone walls and strict laws about what can be done



to the building, says Michael Wright, director of IT.

The Strix network runs through both buildings "without having to string wires across the floor," Wright says. However, the organization retains a wired Fast Ethernet backbone with

10Mbps/sec. throughput to the desktop for permanent administrative uses.

Jose Villarreal, director of technical marketing at Strix, counters that it won't be long before wireless is on par with wired speeds. "Some seriously smart engineers used to say we would never

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Your data runs a
6 minute mile.



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Continued from page 27

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BASICS

The IEEE 802.11 Task Group S met in September to begin developing a standard for interoperable wireless LAN mesh infrastructures. There are at least two items that the standard will likely define:

1 *meshing until you can't see the wireless mesh.* Today, the standard's focus is on 802.11b meshing, says David Queen, chairman of mesh subcommittee and Intel Corp. 802.11s Communications Infrastructure Task Group S. For example, he speculates that the standard could include the way a mesh reflects a signal and what transmission power to use.

2 *interoperability between different wireless mesh standards.* That is the second area giving early vendors their woes. Dual-path selection is analogous to traditional Layer 3 routing protocols, such as Open Shortest Path First, or OSPF. In wireless configurations, though, the algorithm must be tightly coupled with Layer 1 radio metrics, accounting for physical-layer issues such as signal strength and interference when selecting a path.

Conner projects that proposals will be received during the first half of 2005 and that the standard will be complete sometime in 2007.

— John Wester

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Your data runs a
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Guarding THE Grid

Security issues around grid computing are not new or different, but they grow with the grid. By Jaikumar Vijayan

DEVELOPING A GRID INFRASTRUCTURE can help companies dramatically improve hardware utilization rates and boost computing power. But the massive resource aggregation and wider end-user access enabled by grids also have the potential to magnify security risks, implementors say. As a result, companies that are implementing grid technologies need to pay special attention to issues such as user authentication, authorization and access control, as well as auditing and data integrity — both when data is in storage and while it's in transit.

Ensuring the above security measures are in place for responding to the effects of worms and viruses, which can be amplified in a grid setup, is also crucial in grid computing, IT managers say.

Most of the problems that IT staffs have to deal with in a grid environment are similar to the ones they face in nongrid environments, says John Hurley, senior manager for distributed software and systems integration at The Boeing Co.'s mathematics and computing technology group in Seattle. "But [they] take on much greater significance in a grid environment because of the fundamental premise of grids — access, sharing and collaborative computing," he notes.

Grid computing creates the "potential for gateways into an environment" where none existed before, says Hurley.

MORE POWER, MORE RISK

A grid installation harnesses the combined power of numerous servers and PCs to run applications and services as one large system. Grids have been used for years to run compute-

intensive applications in academic and research organizations. The improved resource utilization and power delivered by grids have also begun to attract the attention of corporate America. A survey of 550 database professionals, released in January by Santa Cruz, Calif.-based Evans Data Corp., showed that one in five companies is planning to deploy grids during the next two years.

The potential severity of grid-related security problems depends largely on the context in which grids are being used, say Diane Skover, deputy computer security executive at the Fermi National Accelerator Laboratory in Batavia, Ill. "When you talk to people about grids, they have different scenarios in mind — everything from clusters in the same room run by the same infrastructure team to global power-grid-like infrastructures," says Skover.

Research grids, for instance, typically provide access to users from multiple organizations and security domains. Fermi operates a grid for high-energy physics applications that's accessed by more than 5,000 users in some 80 organizations — several of which are in Europe.

User access, authentication and authorization in such an environment can be a big challenge, given the fact that there's no single identity authority, says Skover, who is also part of the security group at the Global Grid Forum, a Lemont, Ill.-based organization with members from more than 400 vendors and user companies.

In contrast, a grid being run by a private-sector company typically uses internal resources and is accessed by users whose identities are already stored in an internal directory. As a result, it's easier to get a grip on identity management in a company grid than it is with grids in a research setting, Skover says.

CENTRAL MANAGEMENT NEEDED

Regardless of the manner in which grids are being used, there is "more of a requirement for a centrally managed ID infrastructure, whether it is PKI-based or Kerberos-based," says Clifford Neuman, associate director at the University of Southern California's Information Sciences Institute in Marina del Rey, Calif.

What's also required is a way to authenticate the clients and servers that are attached in a grid configuration, he notes. Because of the wider access enabled in a grid environment, it becomes crucial to ensure that data flowing through the network comes from a trusted source and not an imposter.

There are several methods currently available to do this, Neuman says. In a public-key infrastructure environment, for instance, servers and clients could mutually authenticate each other using digital certificates issued by a trusted authority. In a Kerberos setup, the same thing could be accomplished via encrypted keys stored in advance on a Kerberos authentication server, he suggests. Other methods include the use of Secure Sockets Layer technology to authenticate servers by clients before starting an encrypted session.

Companies that are deploying grids also must protect data during transmission on the network via encryption, says Jitku Venkat, chief technology officer at United Devices Inc., an Austin-based vendor of technologies for aggregating computing resources



into clusters and grids. In addition, companies must put mechanisms in place to guarantee that the data isn't tampered with in any manner while it traverses the grid, according to Venkatesan.

Both measures are needed because anyone connected to the grid could access, modify or delete data flowing through it, either accidentally or maliciously, Venkatesan says.

United Devices attaches checksums to data before it's encrypted and then verifies that the checksum is the same when the message is being decrypted to ensure that nothing has been tampered with, Venkatesan explains. "We also recommend that only digitally-signed code modules are permitted on a grid. If it is not signed, don't run it on a grid," he says.

There are also certain security concerns that get "amplified" in grid architectures, says Lee Cooper, chairman of the Enterprise Grid Alliance, a San Ramon, Calif.-based consortium of vendors and users.

One obvious example is the threat from worms and viruses. The same highly automated and efficient manner in which resources are allocated on a grid could be used by a malicious attacker to his advantage, Hurley warns. As a result, "keeping all grid resources fully patched and configured securely begs for some sort of centralized solution," Cooper says.

Good incident-response mechanisms should help minimize the impact of such attacks in case one occurs, Hurley says.

CAREFUL WITH POLICIES

Another crucial area with security implications is policy reconciliation on a grid, according to Skow.

Because grids can run different applications at different times, companies should have a clear understanding of the various policies — such as user ac-

cess restrictions or the authentication requirements that are attached to each application, Skow says.

"There needs to be some consistent and congruent way to mediate those rules. And it has to be done in a very significant way" before companies can take full advantage of grids, Hurley says.

Addressing grid security may not involve new technologies, but because of the increased potential vulnerability, protective measures become more urgent.

Grid architectures in the enterprise face the same security issues that one sees in a nongrid environ-

ment, such as "clearly, these need to be addressed," Cooper points out.

But, he adds, "the same tools and technologies that are used today to secure storage, computing and network resources all apply in a grid architecture."

—Jeffmar Vijayan

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is 7 pounds,
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Digital Light Processing

DEFINITION

Digital Light Processing (DLP) is a system for projecting images that's based on a unique optical semiconductor chip from Texas Instruments. The chip contains millions of tiny mirrors that are individually moved by digital signals in synchronization with a light source and color wheel. The result is a sharp projected image that's clearly visible in a normally lit room.

BY RUSSELL KAY

When one first hears about digital light processing (DLP), it seems almost impossibly complex, even magical — millions of tiny mirrors on a chip the size of your thumbnail, each of them capable of moving thousands of times per second to create a digital image. In fact, DLP (a trademark of Texas Instruments Inc.) gives new meaning to the phrase "smoke and mirrors" as it applies to computer-related technology.

How DLP Works

In essence, DLP is a nanotechnology implementation of the old survival technique of using a mirror to signal for help — its purpose is to shade a controlled series of light flashes on a target to send a message. The mirror in this case is part of an optical semiconductor called a digital micromirror device, or DMD. The DMD chip contains not one but an array of up to 2.1 million microscopic mirrors, each just 16 micrometers square (less than

one-fifth the size of a human hair) and 1 micrometer apart. The DMD chip is driven by a digital video or graphic signal in which each digital pixel corresponds to a single mirror on the DMD. Add a light

source and a projection lens, and the mirrors can reflect a digital image onto a viewing screen or other surface. Each mirror is mounted on tiny hinges, so it can be tilted 12 degrees toward or away from the light source, creating a light or dark pixel on the projection surface.

The control electronics direct each mirror to tilt — in other words, to switch on or off — up to 5,000 times per second. When a mirror is switched on more frequently than off, it reflects a light gray pixel; a mirror that's switched off more often reflects a darker-gray pixel. This lets DLP project up to 1,024 shades of gray.

To get color, such as for a TV set, a rotating color wheel (with red, green and blue filters) is put between the white light source and the DMD. The control input delivers separate signals for each of the three colors, and each mirror (i.e., each pixel) is switched on and off as the filter rotates each color between the lamp and DMD.

For example, to project a yellow pixel, a mirror will reflect only red and green light to the projection surface. To project a purple pixel, that mirror will be switched off while the blue filter is in position, and the blue and yellow flashes will alternate so rapidly, our brains will blend them together and we'll see purple. This process allows a DLP system to produce up to 16.1 million colors. Older DLP systems also included a clear segment to bump up overall brightness at the expense of color saturation.

Consumer-grade television monitors use the system described above. For very large projection, such as in movie theaters and auditoriums, a more sophisticated system uses three DMD chips, one for each color, plus an optical prism. The prism splits white light into colors and then recombines the three images before sending them through the projection lens. This system, called DLP Cinema, can produce 35 trillion colors.

In most applications, DLP competes directly with LCD projection. DLP typically of-



fers greater contrast (up to 5,000-to-1 vs. LCD's 800-to-1), with better blacks, while LCD produces greater color saturation. Side by side, an LCD display looks slightly sharper than a DLP in a dark room, but DLP has the edge with moving video, reducing pixellation, or the "screen-door effect."

The brightest projectors still use LCD technology, which is slightly more efficient, but the smallest, lightest projectors use DLP. In 2003, DLP systems accounted for 13% of the market for large-screen televisions (over 40 inches), according to The NPD Group Inc., a Port Washington, N.Y.-based consultancy. In the past year, the number of models of DLP TVs has tripled.

DLP's Origins

The DMD chip was invented in 1977 by TI scientist Larry Hornbeck, who had been

exploring the manipulation of reflected light since 1972. In 1977, TI started a project to explore the DMD's commercial viability. A year later, it named the new technology DLP.

and formed a separate group (now called the DLP Products division) to develop commercial display applications.

In 1994, TI demonstrated

prototype DLP projectors for the first time. The technology's promise was quickly recognized. In 1997, the Academy of Motion Picture Arts and Sciences chose DLP to project film at the Oscars, where the first three-chip DLP technology was demonstrated to the Hollywood community.

In 1999, DLP Cinema was first demonstrated to the public with the release of *Star Wars Episode I: The Phantom Menace*. By December 2002, TI had shipped 2 million DLP subsystems.

DLP Products has also received two Emmy Awards, for broadcast excellence in 1998 and for technology and engineering in 2003. In 2002, Hornbeck was elected a fellow of the International Society for Optical Engineering and received the David Sarnoff Medal from the Society of Motion Picture and Television Engineers. © 2004

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THE RAINBOW EFFECT

DLP's spinning color wheel results in viewing problems for some people.

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QUICK STUDY



The TI optical semiconductor chip that makes DLP possible.

LINING UP YOUR LINUX LIBRARY

These four titles will help provide the guidance you might need to the open-source operating system.

BOOK REVIEWS

One given in the world of IT is that to succeed, you must never stop learning. With that in mind, four recent books on Linux are definitely worth your time.

— Todd R. Weiss

Building Applications With the Linux Standard Base, by Theodore Ts'o and the Linux Standard Base Team (IBM Press; 246 pages, \$44.99). Now that the Free Standards Group has adopted its Linux Standard Base 2.0 specifications, Linux advocates hope to see more developers writing applications



that will run on any LSB-compliant Linux. That's where this book comes in. Written by key developers of the LSB team, it's a step-by-step guide to making applications LSB-friendly. The book covers development issues in detail, including binary compatibility, application packaging and installation protocols, porting applications from Unix, working with runtime libraries and application troubleshooting and testing. If you weren't sure how to start writing useful

programs for Linux, here's a good place to begin.

Linux Troubleshooting Guide, by Christopher Negus and Thomas Weller (Wiley Publishing Inc.; 500 pages, \$29.99). For users of Red Hat Inc.'s Fedora Linux or Enterprise Linux, this is a valuable nuts-and-bolts guidebook to the intricacies of the open-source operating system. Information about every kind of technical snafu can be found in this book, which covers installation problems, backup and migration issues, printer glitches, intrusion and security concerns and more. The sections are well thought out, with background theory on key subjects as well as detailed instructions on how to approach, diagnose and repair problems. The book largely focuses on the free Fedora operating system, with the idea that by gaining the skills



needed for Fedora, technicians will be better able to relate to Red Hat's enterprise product lines. The book also includes on software from SUSE Linux, Mandrake and the Debian project.

Moving to the Linux Business Desktop

by Marcus Sigma (Addison-Wesley Pearson Education; 605 pages, \$44.99).

This book tackles almost every conceivable question about moving a corporate desktop system from Windows to Linux. All of the unique nuances of Linux are covered, from configuring printers to file sharing, Web services, user and systems management hierarchies, the Linux command-line and shell environments, as well as dual booting and installation strategies.

Highlighted in

often humorous

style are topics

such as office

productivity applica-

tions, Internet

browsing with Linux and more. This book will help you put a feature-rich, reliable and flexible operating system on your users' PCs.

Linux for Non-Geeks, by Rickford Grant (No Starch Press Inc.; 300 pages, \$34.95). After you've followed the steps suggested in *Moving to the Linux Business Desktop*, consider giving a copy of *Linux for Non-Geeks* to all employees in your company to help them get acclimated to their new Linux

world. This easy-to-read handbook isn't for the Linux gurus on your staff. It's for the folks who need to know how to use Linux from the most elemental level. This will teach newbies how to feel confident and comfortable as they explore Linux, and it will open their minds to new possibilities in the workplace, making your Linux deployment a success from the start. © 50071



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Digital Light Processing

DEFINITION

Digital Light Processing (DLP) is a system for projecting images that's based on a unique optical semiconductor chip from Texas Instruments. The chip contains millions of tiny mirrors that are individually moved by digital signals in synchronization with a light source and color wheel. The result is a sharp projected image that's clearly visible in a normally lit room.

BY RUBIN KAY

When one first hears about digital light processing (DLP), it seems almost impossible: complex, even magical — millions of tiny mirrors on a chip, the size of your thumbnail, each of them capable of moving thousands of times per second to create a digital image. In fact, DLP is a trademark of Texas Instruments Inc. gives new meaning to the phrase "smoke and mirrors" as it applies to computer-related technology.

How DLP Works

In essence, DLP is a nanotechnology implementation of the old survival technique of using a mirror to signal for help — its purpose is to shine a controlled series of light flashes on a target to send a message. The mirror in this case is part of an optical semiconductor called a digital micromirror device, or DMD. The DMD chip contains not one but an array of up to 2.3 million microscopic mirrors, each just 16 micrometers square (less than

one-fifth the size of a human hair) and 1 micrometer apart. The DMD chip is driven by a digital video or graphic signal in which each digital pixel corresponds to a single mirror on the DMD. Add a light source and a projection lens, and the mirrors can reflect a digital image onto a viewing screen or other surface. Each mirror is mounted on tiny hinges, so it can be tilted 12 degrees toward or away from the light source, creating a light or dark pixel on the projection surface.

The control electronics direct each mirror to tilt — in other words, to switch on and off — up to 5000 times per second. When a mirror is switched on more frequently than off, it reflects a light gray pixel; a mirror that's switched off more often reflects a darker-gray pixel. This lets DLP project up to 1024 shades of gray.

QUICK STUDY

To get color, such as for a TV set, a rotating color wheel (with red, green and blue filters) is put between the white light source and the DMD. The control input delivers separate signals for each of the three colors, and each mirror (i.e., each pixel) is switched on and off as the filter rotates each color between the lamp and DMD.

For example, to project a yellow pixel, a mirror will reflect only red and green light to the projection surface. To project a blue pixel, that mirror will be switched off while the blue filter is in position, and the blue and yellow flashes will alternate so rapidly, our brains will blend them together and we'll see purple. This process allows a DLP system to produce up to 16.1 million colors. Older DLP systems also included a clear segment to bump up overall brightness at the expense of color saturation.

Consumer-grade television monitors use the system described above. For very large projection, such as in movie theaters and auditoriums, a more sophisticated system uses three DMD chips, one for each color, plus an optical prism. The prism splits white light into colors and then recombines the three images before sending them through the projection lens. This system, called DLP Cinema, can produce 35 trillion colors.

In most applications, DLP competes directly with LCD projection. DLP typically of-



In digital light processing, an image, in this case the head of a pen, is projected by a semiconductor chip that contains millions of tiny mirrors.

fers greater contrast (up to 5,000-to-1 vs. LCD's 800-to-1), with better blacks, while LCD produces greater color saturation. Side by side, an LCD display looks slightly sharper than a DLP in text display applications, but DLP has the edge with moving video, reducing pixelation, or the "screen-door effect."

The brightest projectors still use LCD technology, which is slightly more efficient, but the smallest, lightest projectors use DLP. In 2003, DLP systems accounted for 13% of the market for large-screen televisions (over 40 inches), according to The NPD Group Inc., a Port Washington, NY-based consultancy. In the past year, the number of models of DLP TVs has tripled.

DLP's Origins

The DMD chip was invented in 1987 by TI scientist Larry Hornbeck, who had been

exploring the manipulation of reflected light since 1972. In 1992, TI started a project to explore the DMD's commercial viability. A year later, it named the technology DLP and formed a separate group (now called the DLP Products division) to develop commercial display applications.

In 1994, TI demonstrated

prototype DLP projectors for the first time. The technology's promise was quickly recognized. In 1997, the Academy of Motion Picture Arts and Sciences chose DLP to project film at the Oscars, where the first three-chip DLP technology was demonstrated to the Hollywood community.

In 1999, DLP Cinema was first demonstrated to the public with the release of *Star Wars Episode I: The Phantom Menace*. By December 2002, TI had shipped 2 million DLP subsystems.

DLP Products has also received two Emmy Awards, for broadcast excellence in 1998 and for technology and engineering in 2003. In 2002, Hornbeck was elected a fellow of the International Society for Optical Engineering and received the David Sarnoff Medal from the Society of Motion Picture and Television Engineers. **© 50670**

Key is a Computerworld contributing writer. You can reach him at ruskay@charter.net.

THE RAINBOW EFFECT

DLP's spinning color wheel results in viewing problems for some people.

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The TI optical semiconductor chip that makes DLP possible.

LINING UP YOUR LINUX LIBRARY

These four titles will help provide the guidance you might need to the open-source operating system.

BOOK REVIEWS

One given in the world of IT is that to succeed, you must never stop learning. With that in mind, four recent books on Linux are definitely worth your time.

—Todd R. Weiss

Building Applications With the Linux Standard Base, by Theodore Ts'o and the Linux Standard Base Team (O'Reilly Press, 246 pages, \$44.99). Now that the Free Standards Group has adapted its Linux Standard Base 2.0 specifications, Linux advocates hope to see more developers writing applications



that will run on any LSB-compliant Linux. That's where this book comes in. Written by key developers of the LSB team, it's a step-by-step guide to writing applications LSB-friendly. The book covers development issues in detail, including binary compatibility, application packaging and installation protocols, porting applications from Unix, working with runtime libraries and application troubleshooting and testing. If you weren't sure how to start writing useful

programs for Linux, here's a good place to begin.

Linux Troubleshooting Guide, by Christopher Negus and Thomas Weeks (Wiley Publishing Inc., 598 pages, \$29.99). For users of Red Hat Inc.'s

Fedora Linux or Enterprise Linux, this is a valuable nuts-and-bolts guidebook to the intricacies of the open-source operating system. Information about every kind of technical snafu can be found in this book, which covers installation problems, backup and migration issues, printer glitches, intrusion and security concerns and more. The sections are well thought out, with background theory on key subjects as well as detailed instructions on how to approach, diagnose and repair problems. The book largely focuses on the new Fedora operating system, with the idea that by gaining the skills

needed for Fedora, technicians will be better able to relate to Red Hat's enterprise product lines. The book also touches on software from SUSE Linux AG and the Debian Project.



Moving to the Linux Business Desktop

by Marcel Gagné (Addison-Wesley Pearson Education, 665 pages, \$44.99).

This book tackles almost every conceivable question about moving a corporate desktop system from Windows to Linux. All of the unique nuances of Linux are covered, from configuring printers to file sharing, Web services, user and systems management hierarchies, the Linux command-line and shell environments, as well as dual booting and installation strategies. Also highlighted in an often humorous style are topics such as office productivity applications, Internet

browsing with Linus and more. This book will help you put a feature-rich, reliable and flexible operating system on your users' PCs.

Linux for Non-Geeks, by Rickford Grant (No Starch Press Inc., 308 pages, \$34.95). After you've followed the steps suggested in *Moving to the Linux Business Desktop*, consider giving a copy of *Linux for Non-Geeks* to all employees in your company to help them get acclimated to their new Linux world. This easy-to-read handbook isn't for the Linux gurus on your staff. It's for the folks who need to know how to use Linux from the most elemental level. This will teach newbies how to feel confident and comfortable as they explore Linux, and it will open their minds to new possibilities in the workplace, making your Linux deployment a success from the start. **50871**



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VPN Evolution Progressing to SSL

One VPN technology is decommissioned, but the replacement causes problems. SSL offers some answers, but there are still issues to be resolved. By Mathias Thurman

FOR SEVERAL YEARS, my company used Microsoft Corp.'s Point-to-Point Tunneling Protocol (PPTP) to provide remote users with VPN access to corporate resources. This worked well, and almost all employees who had PPTP permissions were comfortable with this method. But after several security problems with PPTP were reported, we decided about a year ago to deploy virtual private network concentrators from Cisco Systems Inc. at all of our core points of presence.

We ran tests in parallel for about six months to let users get used to this new way of connecting. Users were instructed to download the Cisco VPN client and associated profile and start using the Cisco client. During that period, if the users had problems, they could always fall back on the PPTP connection until the issue was resolved.

That option disappeared about a month ago, though, when we pulled the plug on our PPTP servers. Now, all users have to use the Cisco VPN client. Many global e-mail messages were sent to users about this impending action, but by the time we were ready to retire our PPTP servers, several hundred users were still using it. We tried to advise each of them of the change, but about 50 were traveling, on vacation or otherwise out of reach. This wasn't so bad, considering that we have more than 7,000 employees using the VPN. Our com-

pany has a global presence, so some users we have to communicate with don't speak English and work out of their homes or the other side of the world. Now we have a new set of issues. A particularly loud group in the company is reporting problems with the Cisco VPN client. These users are mostly in sales and need access to demos on the network and sales databases. What makes them loud is that they generate revenue, so they usually get what they want.

The problem is that customers block the ports necessary for the VPN clients to communicate with our VPN gateways. Similar difficulties are experienced by users in hotel rooms for the same reason. This isn't a Cisco issue, mind you; almost any IPsec VPN client would have similar problems.

Meanwhile, we have had numerous requests for access to corporate mail from kiosks. Users have said that when they can't use their company's

issued computer — be it at a conference or a coffee shop — they would like to be able to get into their Microsoft Exchange e-mail and calendar.

We have contemplated extending Microsoft Outlook Web Access externally, but we don't want to do so without robust authentication, access control and encryption.

SSL Solution

With both of these problems in mind, we've decided to explore use of Secure Sockets Layer VPNs. This technology has been around for quite some time, and almost every Web browser on the market today supports SSL, otherwise known as HTTPS, secure HTTP or HTTPS over SSL.

A VPN over SSL is almost guaranteed to solve the problems employees have been having at customer sites, since almost every company lets its employees make outbound Port 80 (standard HTTP) and Port 443 (secure HTTPS) connections.

SSL VPN will also let us extend Outlook Web Access to remote users, but there are two more problems. First, this type of VPN is primarily beneficial for Web-based applications. Second, employees who run complex applications such as PeopleSoft or Oracle, or who need to administer Unix systems via a terminal session, will most likely need to run the Cisco VPN client. That's because it provides a secure connection between their client and our network.

Whereas an SSL VPN provides a secure connection between the client and the application, so we'll be keeping our Cisco VPN infrastructure and adding an SSL VPN alternative.

The second problem we anticipate concerns users who need to access internal Web-

based resources from a kiosk. Many of the SSL VPN technologies require a thin client to be downloaded to the desktop. Many SSL VPN vendors claim that their products are clientless. While this may be true for pure Web-based applications, a Java applet or ActiveX control object must be downloaded to the desktop/laptop/kiosk before any specialized application can be executed.

The problem is that most kiosks are locked down with a policy that prevents users from downloading or installing software. That means we have to look at alternative means of addressing the kiosk scenario. We'll also want to find a vendor that provides a secure browser and client log-off that wipes all traces of activity from the computer, including cached credentials, cached Web pages, temp files and cookies. And we'll want to deploy an SSL infrastructure that allows for two-factor authentication, namely our SecurID tokens.

Of course, this will incur an additional cost per user, since the SecurID tokens, whether soft or hard, are pricey. In addition, the enterprise deployment of SecurID tokens is no trivial task. It is, however, on the security road map, which I'll discuss in a future article.

As for an SSL VPN, we're looking at offerings from Cisco and Sunnyvale, Calif.-based Juniper Networks Inc. Juniper recently acquired Neoset, which has been a longtime leader in SSL.

As with any new technology, to introduce, we'll come up with a set of requirements and conduct rigorous testing to ensure that we have addressed deployment, management, support and, of course, security. ♦

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SECURITY MANAGER'S JOURNAL

SECURITY LOG

Security Bookshelf

10 Annotations to Computer Security, by Matt Bishop (Addison-Wesley Professional, 2004).

Don't be fooled by that "Annotations" —

I found myself re-reading my head several times. This book is thorough and quite detailed, especially in the area of cryptography, where Bishop does a nice job of balancing the mathematically oriented with application. Anyone new to the computer security field will want to check out this section. And anyone studying for a CISSP certification will benefit as well, as Bishop covers most of the exam within the common bodies of knowledge, such as integrity models (Clark-Wilson, Bell-La-Palme).

— Mathias Thurman

Cybersecurity Views to Be Aired

Amid concerns that the White House has put insufficient stress on cybersecurity, congressional and industry officials will address the two-day **Physical-Cyber Security Conference** at the Washington Convention Center in Washington, opening Dec. 7. Robert P. Litt, general counsel for information protection of the U.S. Department of Homeland Security, will discuss how the Bush administration is differentiating cyber and physical security. And Tom, who recently resigned on the DHS's top cybersecurity official, will also be a keynote speaker. His topic is "What Will Lead to Critical Infrastructure Protection?" The conference comes in the wake of contentious debates over the Intelligence Reform and Terrorism Prevention Act (H.R. 19), which included a provision to establish an independent DHS advisory for cybersecurity. The cybersecurity committee, which includes IT industry

WHAT DO YOU THINK?

The week's journal is written by a real security manager. The names and employee numbers have been disguised for obvious reasons. Contact him at mathias@neoset.com, or join the discussion in our forum: QuickLink.silicon.com

To find a complete archive of our Security Manager's Journal, go online to compcworld.com/journal.



Time Zone Tim

If it's Thursday, it must be Brussels. Or Bangkok. Or maybe Birmingham. Come to think of it, intrepid road warrior Time Zone Tim often has to look at the local phone directory when he wakes up to know where his travels have taken him. But no matter where in the world Time Zone Tim may be, he's always in touch with the information he needs thanks to some innovative tools for mobile warriors like him. We caught up with Tim—where else but on his way to the airport, sipping on a double latte.

As usual, you are on the road. What are your most pressing needs when travelling the globe on business?

The first thing that pops into my mind is a business-class seat courtesy of a free upgrade, but if you mean a pressing business need, let me put it this way. When I'm with customers in Rome and they need the current status of pending orders, they don't care that the data is sitting on a server back in the main office in Phoenix. I need secure, wireless access to vital information and I can't be jumping through hoops to get it.

Has email been a problem for you?

No, not since my company began working with Nokia to provide road hounds like me with reliable wireless email. It used to be that a long cab ride in heavy traffic was just unneeded downtime for me. Now I use all that time to check email and message my clients. It sure beats trying to converse with a cab in a language I don't understand! With wireless email, I'll get I gain another hour per day of real productivity given all the running around I do.



About the Interviewer

Bill Laberis was editor in chief of *Computerworld* for ten years (1996-1996). He is president of Bill Laberis Associates, a custom publishing and content company (www.laberis.com). His columns, Webcasts, supplements and magazines are well-known and respected throughout the high-tech industry.

Would you say that staying connected is mission-critical for you, no matter where you are?

Mission-critical—you mean like the way proper nutrition is to the human body? For people like me staying connected is everything. Last week in Tokyo, I followed a competitor into my client's office. While my competitor was trying to

phone someone back home about the availability of some parts, I placed the order right there and won the business. Then we went out for some sushi. Thanks, Nokia!

What are your devices of choice for staying in touch?

I have a few, depending upon my needs. My Nokia 9500 Communicator gives me a full set of business-critical applications, fast network connectivity, and mega memory storage, sort of like taking my office on the road. And my smartphone based on the Nokia Series 60 software platform is just dynamite for voice and data communications. I use it for email, Internet browsing, and occasionally—just occasionally—a quick game of hearts.

What are the most important features of these devices?

For one thing, they have to really help me blast through my work so I can have a bit of time for one of my favorite hobbies—napping. Look, you're talking to a guy with five thumbs on each hand, technically speaking. All my access devices have to be easy enough for any normal business professional to use to quickly communicate with important contacts and access critical data. If it isn't real user friendly, chances are it isn't Nokia. Oh yeah, our IT department wants all mobile devices to be both cost-effective as well as future-proof. That's Nokia, too.

Traveling as you do and needing access to such sensitive information, aren't you worried about data security?

Yes and no. Yes I am worried about what might happen if a competitor or just about anyone else were able to get to the same data I can. That would be bad for my company and therefore bad for me. But no, I'm not really worried because Nokia has worked wonders with something our IT guys call Secure Sockets Layer or SSL, as well as with firewalls and secure VPNs to ensure that people like me practice nothing less than safe computing, anywhere and any time.

Sounds like Nokia is an excellent traveling companion for you?

You can say that again. Nokia is my traveling security blanket. Like a first-run in-flight movie, Nokia makes me feel good.

One final question: Why all the watches?

They seem to sell them everywhere I go these days and I'm a compulsive shopper. I just wish one of them would work as well as my Nokia mobile technology.

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BRIEFS

IBM Claims Record Computing Speed

■ IBM last week announced that it achieved 3.2 million transactions per minute on its DB2 v8.2 database running on an IBM eServer p5 595 with 64 Power5 processors. The company claimed that it has set a world record for computing speed and said that the previous record was 1.2 million transactions per minute. The Transaction Processing Performance Council, a nonprofit industry group that sets benchmarking standards, reported the results.

Constant Data Adds Linux Support

■ Constant Data Inc. in Minneapolis has announced the availability of the latest version of its Constant Replicator software, featuring expanded support for all major 2.4 and 2.6 kernel Linux operating systems, as well as Mac OS X, Sun Solaris and IBM AIX. Constant Replicator is a continuous, real-time data replication application for use in business continuity, data distribution and high-performance computing projects, according to the company. Pricing starts at \$7,200 for one primary and one remote server with a year of support.

ObjectWeb Gains Open-Source Portal

■ Paris-based eXo Platform SARL has joined the ObjectWeb Consortium and is making its enterprise portal code available under the GNU General Public License. eXo Platform is an open-source enterprise portal that enables users to have a customized single point of access to their company's information systems and resources. ObjectWeb said the portal should encourage wider use of its open-source Java 2 Enterprise Edition software. With eXo Platform, ObjectWeb adds a Web application suite layer to its open-source middleware components for corporate computing, which includes the J2EE 1.4 application server.

DANIEL J. WEITZNER

Buildings Become Information Systems

THE TRANSPARENT ENTERPRISE is characterized by increased data integration possibilities across formerly stovepiped databases. Now, even the buildings that house our transparent enterprises are becoming transparent themselves. In response to the demands of energy efficiency, security, lower operating

costs and the need to increase space-planning flexibility, the physical structures in which we work are on their way to becoming more closely integrated with our information infrastructure.

Consider these new requirements in the design of buildings systems and some of the issues they raise:

■ Secure access control:

Linking the provisioning of RFID-type security systems to human resources systems will ensure that the right employees get through the right doors. This will require organizations to make sure appropriate privacy policies and practices are in place.

■ Energy efficiency:

Electric power demand-monitoring systems promise cheaper power and higher levels of availability from the public power grid. Enterprise users must be ready to have their power utilization monitored and possibly even controlled down to the individual device level for this to work.

■ Security:

Video monitoring of premises for both external and internal security purposes is increasingly common. We can hope that this improves the physical security of our buildings, but whether it does or not, it certainly makes the environment more transparent — or intrusive, depending on which side of the camera one sits.

■ Building signage:

Even building signs (e.g., lobby directories, special-purpose meeting-instruction signs and emergency exits) are being integrated in the interoper-



This is the fourth in a series of columns on the transparent enterprise.

New "interoperable" building systems represent a dramatic change in design and function from even the most complex systems of the past. The critical change is that today's "smart" buildings have APIs that allow the buildings' physical systems to be linked, as any other piece of software, to other parts of an enterprise information system. The interface between building systems and the rest of the enterprise information infrastructure will now be defined by a series of SOAP message formats and the exchange of XML-formatted data.

In my own workplace — the new Frank Gehry-designed Stata Center, home of the MIT's Computer Science and Artificial Intelligence Laboratory — some of the world's leading computer scientists are trying to sort out technical and policy designs to make our new, high-busy security system function in a more privacy-friendly and transparent way. Addressing these issues when new systems are being considered, or even when buildings are designed, may save a lot of trouble. We can learn to live with transparency if we give it some advance thought and take the time to discuss what to expect with the people who are about to participate in this new technology. I'll have more to say about developments in the building where I work in another column.

The transparent building raises the design stakes for efforts to ensure the integrity, reliability and accuracy of enterprise information systems. Today, system faults may result in a sales order being lost or an employee's paycheck being delayed. Tomorrow, with more transparent and dynamic links between building systems and current information systems, the results could be an employee locked out of the office, power shutting down in a building at the wrong time or embarrassing information being flashed across the building's public information displays. **© 50998**

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■ **Energy efficiency:** Electric power demand-monitoring systems promise cheaper power and higher levels of availability from the public power grid. Enterprise users must be ready to have their power utilization monitored and possibly even controlled down to the individual device level for this to work.

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■ **Building signage:** Even building signs (e.g., lobby directories, specific-purpose meeting-instruction signs and emergency exits) are being integrated in the interoper-



able building of the future. On arrival in an unfamiliar building, it will be nice to have signs that are dynamically configured to point us in the right direction. I'm not sure how I'll feel, however, when information screens in every elevator lobby of a high-rise inform me — and every other occupant — that my car has been towed out of the parking lot because I'm two months late on my parking fees.

In support of these goals, building systems, once the domain of HVAC engineers and security services, are becoming just one more information system. As with

our other information systems, the first design requirement is that it be built on open standards for interoperability. The International Standards Organization has even released a standard (ISO 16484-5:2003) that "defines data communication services and protocols for computer equipment used for monitoring and control of heating, ventilation, air conditioning and refrigeration, and other building systems." The aim of the standard is to facilitate "the application and use of digital control technology in buildings."

As buildings become more automated, formerly disparate components (HVAC, LANs, security systems and even signage) will become interoperable with one another and with other information systems traditionally considered beyond the boundaries of the building systems themselves [QuickLink 4765].

New "interoperable" building systems represent a dramatic change in design and function from even the most complex systems of the past. The critical change is that today's "smart" buildings have APIs that allow the buildings' physical systems to be linked, as any other piece of software, to other parts of an enterprise information system. The interface between building systems and the rest of the enterprise information infrastructure will now be defined by a series of SOAP message formats and the exchange of XML-formatted data.

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COMPUTERWORLD HAS BEEN NAMED
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Computerworld has been named Magazine of the Year for 2004 by the Association of Business Publishers (ABP) in its annual competition. The magazine, which has 100,000 subscribers, won the award in the category of business technology. The award is based on the magazine's editorial quality, circulation, advertising revenue, and overall performance. Computerworld is the leading magazine for IT professionals, providing them with the latest news, analysis, and tools to help them succeed in their work. The magazine is published weekly and covers a wide range of topics, including software, hardware, networking, security, and data management. It is also a popular resource for IT managers, providing them with the information they need to make informed decisions about their IT operations. Computerworld is a valuable resource for anyone involved in the IT industry, and it is a true leader in the field.

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IT MENTOR

So You Want to Be a Consultant
Think you're ready to take the leap from IT practitioner to hired expert? CIO Doug Lewis has been there, and he says you'd better answer these five questions first. [Page 44](#)

BOOK REVIEWS

Alignment, Alignment, Alignment
Thomas Hoffman reviews three books on the topic du jour in IT — business/IT alignment. And he appraises his already dog-eared project management bible. [Page 46](#)

OPINION

One Born Every Minute
When projects tank, people often act surprised. But Gopal Kapur says only a sucker wouldn't see these failures coming. [Page 48](#)

Educators and IT industry executives are warning that a crisis is looming in the IT job market. Only this time, it's not that there are too many job hunters seeking too few positions. To the contrary, they say that the U.S. isn't producing IT experts in the quantity and quality that it needs to remain the leader of the global IT market.

In an effort to search out the views and perceptions that may be fueling this approaching crisis, Computerworld interviewed a dozen undergraduate and graduate students who are preparing for careers in IT, as well as professors responsible for training them and executives who are recruiting them into the workforce.

Students told us that advanced technical degrees are expensive and may not provide the skills they need to be competitive in the job market. Many plan to seek business degrees instead of technical degrees in graduate school because they fear that they are more likely to be outsourced if they don't have business qualifications.

Elsewhere in academia, prominent academics have been warning for years that the U.S. is producing far too few advanced degree holders in the computer science and IT research fields. In 1997, for example, Eugene Spafford, a

professor of computer science at Purdue University in West Lafayette, Ind., warned members of Congress that 5,500 doctorates in computer science and engineering awarded by North American universities between 1992 and 1997, only eight were awarded to U.S. citizens.

In a new study, Corey Schou, director of the National Information Assurance Training and Education Center at Idaho State University in Pocatello, says that the dearth of people with advanced degrees in IT continues. And while the number of two- and four-year degree programs in IT-related fields is rising, the student base has dropped.

Fears of Outsourcing

"At present, there is a lack of interest in this discipline," says Mathew J. Palak, chairman of the Department of Computer and Information Sciences at Purdue. "This could be due to the uncertainties in the job market. Outsourcing is on everybody's mind, and computer science is considered as a high-risk career choice."

Students echo that concern. Fears of outsourcing played a role in Katherine Farmer's decision to seek an advanced degree. Farmer is studying computer engineering and computer science at the Thayer School of Engineering at

Anything BUT IT

Many students see an advanced degree in IT as a ticket to obsolescence and outsourcing. They have other plans. **BY DAN VERTON**



Students Speak Out

HAYDEN HAYES
Senior
University of Alabama
Tuscaloosa

As a computer science major at the University of Alabama, I am faced with the same challenges that most students in my field are. The job market is still not strong, and many students are having trouble finding internships. However, I am fortunate to have a great support system at my school. The computer science department has a strong network of alumni who are willing to help students find internships and jobs. The department also has a great program for students to get involved in, such as the Alabama Computer Science Association, which I am a part of. Overall, I am grateful for the opportunities I have had at the University of Alabama and I am excited to see what the future holds for me.

MARINA KOLOMITSIS
Graduate student
Thayer School of
Engineering,
Dartmouth College
Hanover, N.H.

After graduating from the University of Michigan in 2003 with a degree in computer science, I was faced with the challenge of finding a job in the field. I applied to many companies and attended several job fairs, but found it difficult to find a position that matched my skills and interests. However, I did manage to find a job at a local software company, where I worked as a developer. Though I enjoyed my work, I soon realized that I wanted to pursue a career in management. In 2003, I was fortunate to find a job as a software engineer at a management consulting firm in the United States.

JUSTIN LIGAS
Senior
Marist College
Poughkeepsie, N.Y.

After graduating from Marist College in 2003 with a degree in computer science, I found it difficult to find a job in the field. I applied to many companies and attended several job fairs, but found it difficult to find a position that matched my skills and interests. However, I did manage to find a job at a local software company, where I worked as a developer. Though I enjoyed my work, I soon realized that I wanted to pursue a career in management. In 2003, I was fortunate to find a job as a software engineer at a management consulting firm in the United States.

MIKE LUTAM MOLLE
Senior
Pace University
New York

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MICHAEL ARMBRUST
Junior
Purdue University
West Lafayette, Ind.

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Dartmouth College in Hanover, N.H. She expects to see a greater demand in the U.S. for high-level design and development work as more low-level jobs are moved overseas.

But others shun IT altogether. "I think new students are scared to get into the IT field of study," says Jerome Baechi, an undergrad at Marist College in Poughkeepsie, N.Y. "With all the news of shifting jobs offshore, [prospective] IT students may be tentative about pursuing a career in computers."

Palakal and others say they also fear that colleges and universities aren't teaching students what they need to know to succeed in the U.S. IT job market, particularly as new security pressures raise the bar for what it means to be skilled in IT.

"There is a disconnect between what most universities teach and what is needed in the job market," says Palakal. "A traditional computer science curriculum prepares students for academic pursuit and not necessarily for the

business world. The business community then must train the graduates to make them employable."

Scott Orr, a network engineer at Purdue, says many universities are now establishing industrial advisory boards to consult faculty about current IT needs and to better prepare students for the workforce.

Yet despite the impending crisis, current demand is still low. Mike Kendall, president of Kendall Placement Group Inc. in St. Louis, says most firms

slowed recruiting during the recession and are only now beginning to once again hire recent college graduates.

After suspending university and college recruiting for several years, ThoughtWorks Inc., a systems integrator in Chicago, resumed recruiting recent graduates in 2004.

Despite having hired only five recent U.S. graduates so far, the global IT professional services firm is launching an intensive immersion program for new recruits. In an interesting twist, the ThoughtWorks boot camp is based overseas.

"As part of our new-hire program, we are sending all of our entry-level hires to a three-month boot camp located in our Bangalore, India, office," says Soma Muhammed, a senior recruiter at ThoughtWorks.

In the new world of global IT, workers need more than just technical skill, she says. "Our people must be a cultural fit as well as being extremely savvy technical individuals." **50655**

PUBLIC OR PRIVATE?

KATHERINE FARMER is a graduate student studying computer engineering and computer science at Dartmouth's Thayer School of Engineering. She's keeping her eyes open for a government job because government programs often involve cutting-edge technologies. She says, "She's also considering the public sector as a career option because she has concerns about the number of private-sector jobs being outsourced."

Unlike Farmer, many students view a career in government, where IT skills are desperately needed and where critical re-

search and development is often done as a road to technical relevance. Nevin Decker, a Purdue computer science undergrad, says he would never apply for a government position. "Most government organizations lack a healthy thinking process culture," he says. "That's not where I want to be."

Pardee undergrad Stephen Seresac says he would consider a government job, but he shares Decker's fears about the culture. "My only concern would be that the nature of working within the bureaucratic system could become stifling," he says.

Hazel Thomas obtained a bachelor's degree in computer science at Pace University in New York and is now pursuing a master's degree in computer information systems. She says she hasn't considered government work because of the salary gap between public and private-sector employment.

Justin Ligas agrees. "The government's largest problem is that often the pay isn't competitive," says the Marist College senior. "What if the pay improved?" "There would be no reason not to," he says.

—Dan Vinton

LUKEWARM JOB MARKET

Career Watch: Tech companies' entry-level college graduates this year than they did in 2003.

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www.computerworld.com

Senior
University of Alabama

Graduate student
Thayer School of
Engineering
Dartmouth College

Senior
Marist College

Junior
Purdue University

Dartmouth College in Hanover, N.H. She expects to see a greater demand in the U.S. for high-level design and development work as more low-level jobs are moved offshore.

But others shun IT altogether. "I think new students are scared to get into the IT field of study," says Jeremy Bucci, an undergrad at Marist College in Poughkeepsie, N.Y. "With all the news of shifting jobs offshore, [prospective] IT students may be tentative about pursuing a career in computers."

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- Justin Lipe agrees. "The government's largest problem is that often the pay isn't competitive," says the Marist College senior. What if the pay improved? "There would be no reason not to," he says.

—Dan Weston

LINKWARM JOB MARKET

Career Watch: High-tech companies had heavy hiring predators this year than they did in 2003.

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HP Innovation





A CIO who's been there tells how to take the leap.
By Doug Lewis

I HAD BEEN RETIRED exactly one week, and panic had already set in. What was I going to do every day? I had worked since I was 14, and I'd been in a corporate environment for the past 37 years.

After that agonizing week, I knew I wasn't emotionally ready to join the ranks of the grizzled retired guys sleeping on benches in the mall. Financially, I was ready. Emotionally, I wasn't.

OK, back to work, but doing what? I felt I was good at my chosen profession of consulting. I didn't want to get back into the day-to-day hassle the job brings with it. I had thought many times about trying consulting but had always opted for the security of a "real job." It was a big decision, so I decided to use the outplacement service that came as part of my retirement package to help me make it.

My outplacement counselor listened to my story and introduced me to a staff member who specialized in consulting start-ups. He gave me some fantastic advice. He told me that to be successful, I had to have answers to the following five questions:

IT MENTOR

PHOTO BY JEFFREY M. STONE

So YOU WANT TO BE A Consultant

1 WHAT ARE YOU SELLING?

You need to understand and clearly state what you're offering. Perhaps more important, you need to understand what you're not selling. Unless you're perfectly clear on this point, you'll confuse potential customers.

For example, I was selling 17 years of experience as a CEO of four Fortune 100 companies and an executive committee perspective on business and technology solutions. I was selling what I knew, what I could do with what I knew, and credibility. I certainly wasn't selling technical expertise!

2 WHO IS YOUR CUSTOMER? WHO IS LIKELY TO BOTH NEED WHAT YOU'RE SELLING AND BE ABLE TO WRITE THE CHECK?

I knew that my customer was going to be either a midsize-company CEO or a big-company CEO. Below that level, they couldn't afford me; above that level, they were going to buy from McKinsey. I didn't want a protracted sell cycle, so I "pitched" only to the decision-makers and out below that level.

3 HOW ARE YOU SELLING?

To build a compelling value proposition and get your story in front of a potential buyer, you have to understand and connect to one or more of your customer's key problems. The drivers may be monetary, regulatory, contractual, competitive or emotional. Unless you make a strong visceral connection between what you're selling and the customer's key challenges, you're wasting your time.

Research the company and the client before you make contact. Exercise your network of contacts to learn as much as possible. A quick Google search for news about both can yield insight about problems that you may be able to help solve. Hoovers.com gives companies' detailed financial results as well as lists of key executives. After you've done your research, match up what you have learned with what you can do for potential clients.

Unless you find a way to get in front of your customer, you can't even start to make any connection. You need to realistically match your "access privilege" to your selling ambitions. Unless you personally know GM's CEO, don't build your business goals around selling to him face to face.

My value proposition was to apply my experience to solve a customer's business problem. I needed not just to understand his view of his problem,

but to determine the underlying causes and how to fix them.

I knew my customers would either already know me or know of me through a trusted source. I wasn't going to sell myself through a Web site, so my Rolodex was my source of potential clients.

4 HOW ARE YOU PRICING YOUR PRODUCT?

Your product is your time. Your knowledge and what you can do with your knowledge. You must know how much to ask for your time as a consultant and how to best package the bill. There are a few heavy hitters getting \$600 to \$1,000 an hour, but there are a lot of little guys happy to get \$100 an hour. Set your price below a certain point, and you're better off bagging groceries. Above a certain level, you'll be going a long time between engagements ... like forever.

I decided to position my price below the heavy hitters who get \$600 and up but high enough to set myself apart from the hoard of guys at \$100 an hour. For some engagements, I charged on a per-hour basis at \$400. I set a policy of never discounting my rate. People talk, and no one wants to pay more than the

THE FIRST ENGAGEMENT

BY LEWIS—After consulting got a push when I approached a local CEO asking for a job as his advisor. He said he had a couple of problems that I might be able to help him with. We agreed to follow up.

During our one-on-one meetings, we discussed his problems and how I might help. I then met with his direct reports and their wives. I submitted a proposal, got back a counterproposal. Then a letter to the company's culture, accepted the engagement, and we were off and running.

The CEO had great people, superb technology, solidified in a few new products and a solid balance sheet. He had two major problems: getting customers to senior-level decision-makers and building profit ROI-based-business cases for buying his products. We decided to tackle the return-on-investment issue first.

One of the CEO's direct reports was assigned to be the internal spe-

6 You need to understand and clearly state what you're offering. I was selling what I knew, what I could do with what I knew, and credibility.

last guy paid for your services.

For other engagements, I did a "package price." I would negotiate a price where the hourly rate was never disclosed. Some customers get riled when they see you getting \$400 an hour — more than they are making — but they don't bat an eye paying a lump sum for an engagement that nets out to \$400 an hour. I also charged half time for travel, and I traveled in a style consistent with that of my customer. I didn't want to be sitting in first class as my customer walked back to his seat in coach.

Sometimes, it's easier to sell the engagement in "chunks" than as a whole.

for the project. A strong external manager was assigned to ensure that we got attention from key players and that the company would contribute the solution. With the CEO's commitment, we utilized key stakeholders inside the company to help.

The first part of the engagement was a proof-of-concept. Could we build an ROI-based business case for the company's products? The second part was to actually build the ROI solution. This step-by-step approach to building convinced the client that the expense was limited to the need for things, good, badly. He ultimately extended the engagement to build introducing the solution to the partners and doing brief runs with potential clients.

As it turned out, the ROI-based business case tool and process became the solution to the CEO's overall issue.

—Doug Lewis

I preferred to break up an engagement into discovery, planning, execution and wrap-up phases, with each phase priced separately. The discovery phase let both the client and me get a better handle on how much the rest of the engagement was going to cost. It also gave both of us an opportunity to bail out of the engagement gracefully if it wasn't a good fit. Adjust your billing strategy to the customer. After all, it's his money.

5 HOW ARE YOU GOING TO FIND YOUR NEXT CUSTOMER?

That first customer sometimes comes early, but when the job ends, that next engagement isn't always waiting. You have to know how you will find your second and third customers — how you will fill your "sales funnel." Lots of prospects go into the wide part of the funnel, and precious few come out the narrow end. Unless you have a way to fill it, you're in a heap of trouble.

My placement adviser gave me a great tip for filling the sales funnel. Ask your client for five referrals. Ask him to personally call the five and insist that they agree to a visit from you. This is much stronger than providing favorable feedback on your engagement. My adviser further suggested asking each of the five for advice on potential business outside their companies. He also recommended that I take speaking engagements and write articles.

I found the advice to be excellent. I allocated about 20% of my time to new business development. I wrote articles on subjects that interested me with the idea that other CEOs would find them interesting and might want to do business with me. I made time to speak at CIO gatherings.

I also learned to assess speaking engagements upfront after a disastrous hour discussing senior management information security strategy before an audience of ultracharacters. (I had violated my principle of selling only to decision-makers who can write the check.) I helped start a regional CIO group that met monthly to hear noted speakers. I used my current engagements to leverage access to decision-makers in other companies.

In summary, the advice worked for me as a company of one. I stayed in consulting for only nine months, but I was busy the entire time. I had great clients, and I think they believe they received good value for their money.

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Lewis is CIO at Carnival Corp. in Miami. Contact him at dlewis@carnival.com.

Alignment, Alignment, Alignment

It's the topic du jour in management books. Some takes on how to achieve it; plus, a project management bible.

BOOK REVIEWS

I read lots of IT management books and try to narrow down the best ones to recommend to Computerworld's readers. It drives my wife crazy because the books keep pouring in and filling up my cramped home-office (i.e., the cockpit). Here are some keepers (and now I can finally clear out the others). — Thomas Hoffman

From Business Strategy to IT Action: Right Decisions for a Better Bottom Line, by Robert J. Benson, Thomas L. Buzignoli and William B. Walton (John Wiley & Sons; 328 pages, \$45).

This book's central thesis is that an organization should invest in IT only when it directly supports business strategies and operational effectiveness. Tough to argue against that.

The book provides a road map for C-level executives,

including CIOs, on how to manage and invest in IT to deliver business value. The authors, each of whom is a principal at The Beta Group, an IT consulting firm in St. Louis, describe a "strategy-to-bottom-line value chain" framework that can help guide a company from business strategies to the right IT decisions.

The authors touch upon areas you'd expect them to, such as advocating the use of portfolio management tools to help organizations prioritize IT and business investments. But they take those concepts a step further by suggesting actions readers can take to achieve the right results.

One of the features that I liked most is a section at the end of each chapter in which the authors pose questions that senior executives should ask themselves on a given topic, such as, "Are we investing new IT resources in the right places?"

This is very practical tome that takes a structured approach to slaying the old IT/business alignment dragon.

Manage IT as a Business: How to Achieve Alignment and Add Value to the Company, by Bennett P. Lientz and Lee Larsen (Elsevier Butterworth-Heinemann; 304 pages, \$44.95).

While *From Business Strategy*

to IT Action seems to be geared more toward senior executives, *Managing IT as a Business* appears to be written for IT and business managers who are in the trenches doing the actual work. This book is very straightforward about the problems that have afflicted IT organizations over the years, such as business alignment shortcomings and the burden of managing day-to-day operations, and it offers some fresh ideas about how to deal with these issues. One, for example, is to rate the IT organization using comprehensive performance metrics that measure such variables as the duration of projects, the use of repeatable processes and the amount of knowledge transfer gained from vendors.

The book also tackles the misallocation of IT resources and the tendency among organizations in select projects for tactical rather than strategic reasons.

The authors have hands-on project management experience, and it shows. Lientz, a professor of information systems at the UCLA Anderson Graduate School of Management, was a project leader involved in the development of Arpanet, the precursor to the Internet. Larsen has served as an IT manager, business manager and consultant for more than 40 companies over the past 25 years. The techniques they draw upon have been implemented in more than 60 organizations around the world.

and Business Managers, by Martin Curley (Intel Press; 350 pages, \$49.95).

OK, I should first admit that Intel CEO Doug Busch recommended this book, which was written by one of his colleagues. But since Intel is widely recognized as a world-class leader in terms of how it manages IT internally, I figured it was worth a read.

And it is. Curley, who is director of IT innovation for Intel Information Technology in Ireland, focuses primarily on ways to measure and manage IT's business value.

Managing Information Technology for Business Value

Written by



He rightly notes that return-on-investment metrics can be notoriously difficult to extrapolate from IT. That's because so many factors — from business and technical risks to the difficulty of quantifying strategic alignment — can influence the outcome.

Curley suggests that IT and business leaders consider adopting a tool that Intel has developed called the IT business value index (BVI).

According to Curley, the BVI is a decision-support tool that, when combined with portfolio management techniques, can help organizations more accurately calculate the business value generated by an IT investment. Since the BVI contains a common methodology and vocabulary, managers can use it to compare disparate IT and business investments.

Curley offers other useful tips, such as creating an IT annual report to help detail prior-year achievements to senior management while outlining future challenges.

Considering Intel's success

in IT management and the forward-thinking advice that Curley dispenses, this book is worth your time.

Project Management for Information, Technology, Business and Certification, by Gopal K. Kapoor (Prentice Hall; 528 pages, \$86.60).

This is one of the most comprehensive books on project management. Not that this should come as a surprise, given Kapoor's pedigree as the founder of the Center for Project Management and his decades of hands-on experience in working with everyone in the enterprise, from the CEO to end users.

I found myself dog-earing page after page with insights I wanted to revisit. ("During the last two decades, there have been numerous instances where management decided to train people in the use of project management software, without first training them in project management principles and practices.")

Kapoor, who's a Computerworld columnist, lists some of the primary reasons for project failures, including unclear business objectives, complexity and risks discovered too late in the project life cycle. He then offers advice on how to achieve success. Readers will likely be intrigued by the "mocking post" concept found on page 49 of the book.

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BEST PLACES
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or send e-mail to bestplaces@computerworld.com.

EXEC TRACK

Webb to Join Equifax as CTO

Equifax Inc. announced that ROBERT J. WEBB will join the company as chief technology officer. Webb will report to Chairman and CEO Tom Chapman and will be responsible for managing the Atlanta-based company's global IT infrastructure. Previously, Webb served as CIO in several divisions of General Electric Co. Most recently, he was managing director of Canadian vendor financing at GE.

CIO Takes COO Role at HomeGoods

ROBERT CATALDO will be promoted to chief operating officer at HomeGoods from his post as CIO of The TJX Companies Inc., a Framingham, Mass.-based retailer. Cataldo has been CIO since 2001. Prior to that, he held senior systems and finance positions at the HomeGoods division, which he joined in 1997. He also held financial positions at TJX predecessor Zayre Corp.

Healthcare Partners Names New CFO

ZAN F. CALHOUN has joined Healthcare Partners Inc. in Los Angeles as CFO. Previously, he was president of DMO Healthcare Solutions Inc., and before that, he was director of the commercial health care consulting practice at BearingPoint Inc. (formerly KPMG Consulting).

Powell Tapped as CTO at HighBeam

HighBeam Research Inc., a Chicago-based operator of an online research engine for individuals, announced that KEITH POWELL has joined the company as vice president and CTO. He will be responsible for managing all technology functions and for the company's research and development efforts. Powell was previously a senior manager at BearingPoint.

THERE WE GO AGAIN. "Technical glitches in a \$52 million installation of PeopleSoft Inc.'s applications at Indiana University have left thousands of students without access to promised financial aid . . ."

[QuickLink 49349]. What is the explanation? According to university spokeswoman Norma Holland, "The glitches were not caused by the system proper."

From this statement I would gather that Holland seems to think that software is the "system proper." She doesn't realize that a system is the amalgamation of software, processes and people.

Any project manager worth her work-breakdown structure knows that for a system to be successful, it is imperative that the work processes be aligned to the system processes and that users be trained in a timely manner — far ahead of the delivery of the technology. As part of due diligence for any proposed system, the project manager must ask the following questions:

- What degree of change will the new system bring to the processes currently being followed?
- Will the users be willing to make the necessary changes?
- Are the users ready to make the necessary changes?
- What is the latest time by which the users must be made ready?

Obviously, either these questions weren't asked, or if they were asked, no follow-up plans were put into place at the university. As a result, with classes looming, the IT team ran out of time for system testing and user training.

Was the date for the start of classes an unknown? If the team had any proj-



Robert J. Webb will join the company as chief technology officer. Webb will report to Chairman and CEO Tom Chapman and will be responsible for managing the Atlanta-based company's global IT infrastructure.

ect management sense, it would have established "runaway triggers" for system testing and end-user training. Those would have made the project manager aware of the impending delays, and the IT team could have done one of the following:

- Speed up the project to finish the system testing and user training in a timely manner.
- Implement contingency procedures and work-arounds.
- Suspend the project in an orderly way until the following semester.

Obviously, IT staffers didn't have a systematic status-tracking process in place and simply ran into the start-of-classes wall. Then they blamed the wall for being there. And apparently they waited until the end of the project to start training the users. Smart project managers (and sponsors) know that user training must begin well in advance of the system implementation.

But there's more. Another university spokeswoman, Sue Williams, said, "Most problems were caused by interface issues between the PeopleSoft application and the loan systems at lending institutions . . ."

Is one to believe that the interface was unexpected and sprung onto the university's PeopleSoft system out of left field? The data interface with external systems, a perennial problem, must be investigated as a part of the

project planning process. These questions should have been asked:

- What is the quality of incoming data?
- What volumes of data will need to be handled?
- What will be the frequency of data transmission?
- Will there be any media/infrastructure incompatibility?
- Will the data be available in a timely manner?
- Are there any cross-system data dependencies?

Obviously, none of that took place or this fiasco wouldn't have happened.

Williams says the financial aid module is "big and complex." That is what scope parsing is all about: chunking a big project into smaller, progressive scope modules. Why didn't the sponsor (if there was one) make sure that the complex project was broken into smaller chunks? Instead, the IT team brought all eight campuses live in a single cycle, knowing very well the inherent complexity of the endeavor. As a result, 3,000 students, many of their parents and hundreds of landlords were left in the lurch.

How many ways did this project violate project management best practices?

1. Poor or no due diligence.
2. No user training.
3. Absence of system status alerts.
4. System interface problems were ignored.

5. The complex project wasn't broken down into progressively delivered smaller chunks.

If after all the missteps the university is still a "happy customer," as stated by PeopleSoft, then it should step right up and buy a ticket to see the genuine two-headed double-talking happy monkey from Mars. **50622**

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GOPAL K. KAPUR

One Born
Every Minute

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TRANSITIONS • TRAVEL • SPEAKING

Staying a Step Ahead

THINK YOU'LL BE ABLE to choose your own schedule for utility computing? Think again. Last week, the BBC reported online that students may soon be using a pay-as-you-go computing utility on a routine basis. And not computer science students, either — these are student animators [QuickLink a5160].

Hewlett-Packard's research lab in Bristol, England, just launched a rendering service for small animation companies to test its grid computing model. The animators create their designs, then HP's computing grids turn them into 3-D animated films. Several participants told the BBC they expect students to be using the utility soon. At that point, the grid plan will be out of our hands.

We know how it will happen. We've seen it before. As long as a technology is too difficult, complicated or expensive for anyone except IT departments to use, IT shops can keep a firm grip on how we roll it out, and when. But if the technology gets cheap and simple enough for non-IT people to use, we lose control.

It happened with PCs and spreadsheets, with the Web and handheld computers and wireless network access points. Users get their hands on a new technology. They figure it out. Then they want to use it for business — and if the IT department isn't ready, users start without us.

So now that HP Labs Bristol has started up its Frame Factory animation-rendering utility service, the clock is ticking. Today, a handful of small animation studios use the service to create short cartoons. Soon, students will use it. Then the idea will expand beyond Bristol. Other rendering services will be launched. It won't be long before we have student animators using rendering grids in our own backyards.

Those student animators won't have to be technical wizards. They'll use design software on desktop workstations, and the actual workings of how their designs are turned into fancy, textured 3-D images may be a mystery to them. But they'll understand the concept of a computing utility, and they'll have hands-on experience using it.

In fact, they'll understand it better than we do.

Let's face it — most IT shops aren't ready for utility computing today. Some of us are dipping a toe in, but we all know it's still very ear-

ly. Most of us plan to wait until standards are set and someone explains it to us.

But when students get access to utility computing, our plans won't matter. Those student animators — and the college friends they hang around with — are just a few years away from landing in our marketing and sales and advertising departments.

When they tell their bosses that they were using pay-as-you-go processing when they were in school, we in IT won't be able to convince anyone that utility computing isn't ready yet. We'll have to make it happen — or they'll find utility computing vendors without us.

Then we'll have to play catch-up as we try to pull their utility computing projects back under IT's control. It'll be PCs and handhelds and wireless access points all over again.

But that's not all bad news.

Look, if users figure out utility computing, we won't have to explain it to them. They'll already understand the business value. They'll know it's useful. They'll even tell us how.

True, that means we won't be setting the utility computing agenda. But our job is to make IT serve the business, remember?

If we pay attention and time it right, we can make our jump into utility computing after the bloodiest part of the bleeding edge is past — but still just before users start asking us for it.

And if that means grids don't arrive for us exactly on the schedule we'd choose — well, at least this time we'll have a hand in the plan.

• 51030



FRANK NITRO, Computerworld's senior news columnist, has covered IT for more than 20 years. Contact him at frank_nitro@computerworld.com.

Complex World, Simple Minds

New here doesn't seem to have a knack for IT at this bank, so pilot fish puts him to work logging ATM problems. "I stepped him through the basics as he took his first call," fish says. "He dutifully logged the location and the nature of the problem, then asked me what time he should note in that column. I nodded up at the wall clock and responded, 'Right now.' Later, fish finds newbie has recorded the incident exactly as instructed — and filled the time column with 'right now.'

Penny-Wise

SHARK TANK
February, Experiencing

Flash back to 1997. This company uses a complicated data translation and verification program with customers' data.

Defining the input data is tricky — "Typically, you get a lot of errors or you get none," says a pilot fish working there. But, for one new customer, a 10,000-record file kicks out just two errors. They're both birthdays — and they're recorded as "Feb. 30." Customer's explanation: "We don't know the day of the month for a birthday, we work it in the 30th."

It Happens

This server runs fine all day but crashes every night during an unattended backup, and sys-admin pilot fish can't see why. "I could run the backup during the day without problems," fish says. "I decided to start replacing hardware, opened the system and found mouse droppings in the bottom of the case." Looks like the mice are using the network card as a toilet, and it shorts out — but dries out enough by morning to work. Fish's solution? "Sealing the case, replacing the network card and putting

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FRANK HAYES • FRANKLY SPEAKING

Staying a Step Ahead

THINK YOU'LL BE ABLE to choose your own schedule for utility computing? Think again. Last week, the BBC reported online that students may soon be using a pay-as-you-go computing utility on a routine basis. And not computer science students, either — these are student animators [QuickLink a5160].

Hewlett-Packard's research lab in Bristol, England, just launched a rendering service for small animation companies to test its grid computing model. The animators create their designs, then HP's computing grids turn them into 3-D animated films. Several participants told the BBC they expect students to be using the utility soon.

At that point, the grid plan will be out of our hands.

We know how it will happen. We've seen it before. As long as a technology is too difficult, complicated or expensive for anyone except IT departments to use, IT shops can keep a firm grip on how we roll it out, and when. But if the technology gets cheap and simple enough for non-IT people to use, we lose control.

It happened with PCs and spreadsheets, with the Web and handheld computers and wireless network access points. Users get their hands on a new technology. They figure it out. Then they want to use it for business — and if the IT department isn't ready, users start without us.

So now that HP Labs Bristol has started up its Frame Factory animation-rendering utility service, the clock is ticking. Today, a handful of small animation studios use the service to create short cartoons. Soon, students will use it. Then the idea will expand beyond Bristol. Other rendering services will be launched. It won't be long before we have student animators using rendering grids in our own backyards.

Those student animators won't have to be technical wizards. They'll use design software on desktop workstations, and the actual workings of how their designs are turned into fancy, textured 3-D images may be a mystery to them. But they'll understand the concept of a computing utility, and they'll have hands-on experience using it.

In fact, they'll understand it better than we do.

Let's face it — most IT shops aren't ready for utility computing today. Some of us are dipping a toe in, but we all know it's still very ear-

ly. Most of us plan to wait until standards are set and someone explains it to us.

But when students get access to utility computing, our plans won't matter. Those student animators — and the college friends they hang around with — are just a few years away from landing in our marketing and sales and advertising departments.

When they tell their bosses that they were using pay-as-you-go processing when they were in school, we in IT won't be able to convince anyone that utility computing isn't ready yet. We'll have to make it happen — or they'll find utility computing vendors without us.

Then we'll have to play catch-up as we try to pull their utility computing projects back under IT's control. It'll be PCs and handhelds and wireless access points all over again.

But that's not all bad news.

Look, if users figure out utility computing, we won't have to explain it to them. They'll already understand the business value. They'll know it's useful. They'll even tell us how.

True, that means we won't be setting the utility computing agenda. But our job is to make IT serve the business, remember?

If we pay attention and time it right, we can make our jump into utility computing after the bloodiest part of the bleeding edge is past — but still just before users start asking us for it.

And if that means grids don't arrive for us exactly on the schedule we'd choose — well, at least this time we'll have a hand in the plan.

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SHARK
TANK





TEN MOVES AHEAD

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RIVISON OVER LSI SYSTEMS FBMM
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